



COURSEWARE

# Text Generative AI Courseware

Fabienne Mouris, Wahbe Rezek

 **Van Haren**  
PUBLISHING



Generative AI  
Courseware

## Colophon

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## **Publisher about the Courseware**

The Courseware was created by experts from the industry who served as the author(s) for this publication. The input for the material is based on existing publications and the experience and expertise of the author(s). The material has been revised by trainers who also have experience working with the material. Close attention was also paid to the key learning points to ensure what needs to be mastered.

The objective of the courseware is to provide maximum support to the trainer and to the student, during his or her training. The material has a modular structure and according to the author(s) has the highest success rate should the student opt for examination. The Courseware is also accredited for this reason, wherever applicable.

In order to satisfy the requirements for accreditation the material must meet certain quality standards. The structure, the use of certain terms, diagrams and references are all part of this accreditation. Additionally, the material must be made available to each student in order to obtain full accreditation. To optimally support the trainer and the participant of the training assignments, practice exams and results are provided with the material.

Direct reference to advised literature is also regularly covered in the sheets so that students can find additional information concerning a particular topic. The decision to leave out notes pages from the Courseware was to encourage students to take notes throughout the material.

Although the courseware is complete, the possibility that the trainer deviates from the structure of the sheets or chooses to not refer to all the sheets or commands does exist. The student always has the possibility to cover these topics and go through them on their own time. It is recommended to follow the structure of the courseware and publications for maximum exam preparation.

The courseware and the recommended literature are the perfect combination to learn and understand the theory.

-- Van Haren Publishing

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- Architecture (Enterprise and IT)
- Business Management and
- Project Management

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### Business Management

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BRMBOK™  
BTF  
EFQM  
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## Self-Reflection of understanding Diagram

*‘What you do not measure, you cannot control.’ – Tom Peters*

Fill in this diagram to self-evaluate your understanding of the material. This is an evaluation of how well you know the material and how well you understand it. In order to pass the exam successfully you should be aiming to reach the higher end of Level 3. If you really want to become a pro, then you should be aiming for Level 4. Your overall level of understanding will naturally follow the learning curve. So, it’s important to keep track of where you are at each point of the training and address any areas of difficulty.

Based on where you are within the Self-Reflection of Understanding diagram you can evaluate the progress of your own training.

<i>Level of Understanding</i>	<i>Before Training (Pre-knowledge)</i>	<i>Training Part 1 (1st Half)</i>	<i>Training Part 2 (2nd Half)</i>	<i>After studying / reading the book</i>	<i>After exercises and the Practice exam</i>
<i>Level 4 I can explain the content and apply it .</i>					
<i>Level 3 I get it! I am right where I am supposed to be.</i>					<i>Ready for the exam!</i>
<i>Level 2 I almost have it but could use more practice.</i>					
<i>Level 1 I am learning but don't quite get it yet.</i>					

(Self-Reflection of Understanding Diagram)

Write down the problem areas that you are still having difficulty with so that you can consolidate them yourself, or with your trainer. After you have had a look at these, then you should evaluate to see if you now have a better understanding of where you actually are on the learning curve.

### Troubleshooting

*Problem areas:*

*Topic:*

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Part 1

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Part 2

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You have gone  
through the book  
and studied.

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You have answered  
the questions and  
done the practice  
exam.

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## Timetable

- Introduction to AI
- Introduction to Generative AI Tools
- Ethics
- Prompt engineering
- Business field examples
- Case study
- Paid features of Generative AI Tools
- Future development



# Syllabus

## EDF (Text) Generative AI Ambassador

Career path Prompt Engineer for (Text) Generative AI



**Version 3.1**

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Generative AI Fundamentals ©Van Haren Certify

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## Introduction

### The syllabus

The syllabus outlines the knowledge that the candidate will be tested on during the (Text) Generative AI Ambassador exam. It also provides suggestions for preparation and highlights the benefits of taking this exam. This program is a collaboration between the Effective Data Foundation and Van Haren Certify.

### The Effective Data Foundation (EDF)

The Effective Data Foundation (EDF) is a private collaboration that aims to promote effective use of data.

Data and data-related subjects and specializations are the focus of the Effective Data Foundation (EDF), a consortium of professionals and institutes. EDF does not limit itself to IT experts, but aims to empower all business professionals to make use of data. EDF believes that data should guide, not dictate, decisions.

Therefore, EDF values the human factor as essential, unlike other organizations that claim to be data-driven.

An EDF (Text) Generative AI Foundation Certified professional will be able to leverage the full power of (Text) Generative AI. And increase their content productivity, effectiveness, and performance up to a thousandfold.

### Certifying Organisation

Van Haren Certify.

### Certification levels and scope

The program exists mainly out of the Ambassador level for (Text) Generative AI. The Effective Data Foundation works closely with Van Haren Certify to ensure further development of professionals within the industry.

By becoming certified in (Text) Generative AI, business professionals can master the fundamentals of (Text) Generative AI. This will enable them to create effective and highly functional prompts that align with their business objectives while also understanding the ethical and legislative boundaries they should look out for. With this certification, professionals can gain a competitive edge in their field and stay ahead of the curve.

#### (Text) Generative AI Ambassador

The (Text) Generative AI Certification can be obtained after passing the exam, following participation in a (Text) Generative AI, Prompt Engineer Foundation or ChatGPT for Business course. Professionals can opt to go for the (Text) Generative AI Ambassador Certification if they have mastered the fundamental content covered by the learning objectives of the (Text) Generative AI Ambassador Certification.

This course teaches non-technical professionals about the language model and its natural language processing abilities. It covers prompt engineering, business use cases, limitations, risks, and hands-on experience using ChatGPT. Students will learn to evaluate and implement ChatGPT for real-world business problems.

## EDF (Text) Generative AI Ambassador exam

You first need to have successfully completed the (Text) Generative AI Ambassador exam to obtain the (Text) Generative AI Ambassador Certificate. The exam procedure is explained in this section.

### Practical information

You must pass a multiple-choice exam in which your knowledge of (Text) Generative AI will be tested to obtain a (Text) Generative AI Ambassador certificate.

All exam candidates will get access to the online exam environment and will need to answer 40 multiple-choice questions within 60 minutes.

You must answer 65% of the questions correctly (or at least 26 of the 40 questions) to pass. Each question has precisely four possible answers where only one is the best answer.

You will receive the result immediately after the exam. (Digital) Access to your certificate will be given once you have passed.

Registration for the exam can be done by purchasing a participation certificate at [www.vanharen.store](http://www.vanharen.store)

Number of questions:	40
Time (minutes) for the exam:	60 minutes
% minimal passing grade:	65%
Open/closed book:	Closed
Language:	English
Exam format:	Online
Type of questions:	Multiple choice
Are negative questions included in the exam? (e.g. "which is NOT a principle of ****")	Yes. Candidates are advised to read the questions carefully.

### Levels

According to the Bloom Revised Taxonomy, the (Text) Generative AI Ambassador Certification tests candidates mainly at the levels 1 and 2. Candidates are also partially tested at level 3 although this is not too in-depth.

- Bloom Level 1: Recall & Retention

We test candidates on their ability to memorize factual information, to retain information by collecting, remembering, and recognizing specific knowledge. Knowledge includes facts, terms, answers, or terminology.

- Bloom Level 2: Understanding

We test candidates on their ability to construct meaning from oral, written, or graphical pieces of information. This is done by interpreting, summarizing, distracting, comparing, classifying, predicting, or explaining the message.

- Bloom Level 3: Applying

Being able to solve problems by applying them in existing and new situations, leveraging acquired knowledge, techniques, facts, and rules in various situations. This can include choosing or identifying the correct answer between a range of options or appropriate actions.

## Learning objectives

In this section, you can read about how the (Text) Generative AI Ambassador exam is structured and which subjects you will be tested on as a candidate. It is also a tool that you can use to prepare yourself for the test.

After successfully certifying in (Text) Generative AI Ambassador, a professional has demonstrated that they are able to:

- Use a generative AI model (like ChatGPT), to create various types of content and solve different business problems.
- Apply prompt engineering techniques and strategies to communicate effectively with generative AI tools and optimize their output.
- Explore the features and benefits of the paid version of generative AI applications, as well as other AI technologies and their future perspective.

## Exam structure

The exam specifications describe the topics covered in the subject matter of the (Text) Generative AI Ambassador exam, and their relative importance. Questions can be asked during the exam about the following subjects.

Exam Requirements	Sub-modules	Weight	Bloom
1. Introduction to AI	<ul style="list-style-type: none"><li>● Essentials of AI</li><li>● AI in practice</li></ul>	10%	1 + 2
2. Introduction to (Text) Generative	<ul style="list-style-type: none"><li>● Introduction to (Text) Generative</li><li>● Application, limitations, risks, large language models</li></ul>	10%	1 + 2
3. Prompt Engineering	<ul style="list-style-type: none"><li>● Prompt engineering application</li><li>● Strategies and techniques</li><li>● Expert role</li><li>● Prompt design principles</li></ul>	15%	1 + 2
4. Application of (Text) Generative AI in theory	<ul style="list-style-type: none"><li>● Problem setting</li><li>● Applying prompt design principles</li><li>● Prompt basics</li></ul>	15%	1 + 2 + 3
5. Application of (Text) Generative AI in practice	<ul style="list-style-type: none"><li>● Content generation</li><li>● Idea validation</li><li>● Researching complex topics</li></ul>	15%	1 + 2 + 3
6. Premium versions, APIs & Plugins	<ul style="list-style-type: none"><li>● Premium versions</li><li>● Showcase plugins</li><li>● Advanced Data Analysis</li><li>● API for custom AI Chatbot</li></ul>	15%	1 + 2
7. The future of Generative AI	<ul style="list-style-type: none"><li>● NLP models</li><li>● (Text)-to-image, music, speech, video and 3D</li></ul>	10%	1 + 2
8. Ethics	<ul style="list-style-type: none"><li>● Biases in AI algorithms</li><li>● Influence on job market</li><li>● Privacy and security</li><li>● Misinformation</li><li>● Copyright</li></ul>	10%	1 + 2

## Exam specifications

### 1. Introduction to AI

- What is AI?
- Where do you find it in practice?
- Two types of AI
- Why is AI important? The impact on our society

### 2. Introduction to (Text) Generative

- Generative AI in general
- What can ChatGPT do?
- Limitations, risks, hallucinations
- Large language models
- (Optional) Architecture: GPT, SFT, RLHF

### 3. Prompt Engineering

- Tips and tricks for first use
- Strategies and techniques
- Expert role
- Prompt structure

### 4. Business field examples

- Problem setting
- Design prompt structure
- Show ChatGPT output (applied)

### 5. Applied Text Generative AI

- Content generation
- Brainstorming and idea validation
- Understanding and researching complex topics

### 6. Premium versions, APIs & Plugins

- GPT 4
- Showcase ChatGPT Plugins
- Advanced Data Analysis
- API for custom AI Chatbot

### 7. The future of Generative AI

- Other NLP models
- (Text)-to-image
- (Text)-to-music
- (Text)-to-speech
- (Text)-to-video
- (Text)-to-3D
- Future perspective

### 8. Ethics

- Biases in AI algorithms
- Unemployment due to automation
- Privacy and security
- Misinformation
- Copyright

## Key terms and concepts

The Generative AI Fundamentals Certification uses several key terms, concepts, and definitions as shown in the list below. You can use these definitions to support and clarify topics related to the exam. However, if you only learn these terms, then you are often not sufficiently prepared to pass the exam!

Key term	Concept
Artificial Intelligence (AI):	A branch of computer science that aims to create machines that can perform tasks which typically require human intelligence, such as learning, reasoning, problem-solving, and perception.
Generative AI:	A branch of AI that enables a computer to create new and realistic artifacts, such as images, video, music, speech, (Text), software code and product designs, based on existing data.
Natural Language Processing (NLP):	A subfield of artificial intelligence that focuses on the interaction between computers and humans using natural language.
Machine Learning (ML):	A subset of AI that focuses on developing algorithms that can learn and improve from data, without being explicitly programmed.
Supervised Learning:	A machine learning approach where the model is trained on labeled data, where the output is known, and the goal is to learn a general rule that maps inputs to outputs.
Reinforcement Learning:	A type of machine learning where an AI model learns from feedback given by humans in order to improve its performance.
ChatGPT:	ChatGPT is the web-interface to communicate with a language model developed by OpenAI (GPT+version number) that uses natural language processing (NLP) to generate human-like responses to (Text) prompts.
Proximal Policy Optimization (PPO):	A form of reinforcement learning used in the ChatGPT model.
Prompt:	A (Text) input given to the ChatGPT model to generate a response.
Prompt Engineering:	The process of creating high-quality prompts that result in accurate and appropriate responses from ChatGPT.
Use Case:	A practical application of ChatGPT in a business or real-world scenario.
Limitations:	The potential drawbacks and shortcomings of ChatGPT, including accuracy and bias issues.
Risks:	Potential negative consequences of using ChatGPT, such as misinformation or ethical concerns.
Ethical Guidelines:	A set of rules and principles to ensure the responsible and ethical use of ChatGPT and other AI technologies.
Foundation Models:	Large-scale AI models that are trained on a broad set of unlabeled data and can be used for different tasks with additional fine-tuning.
Generative Pretrained Transformer (GPT):	A family of foundation models that use deep neural networks to generate natural language (Text)s.
DALL·E:	A generative AI model developed by OpenAI that can create images from (Text) descriptions using a GPT architecture.
(Text)-to-image:	A generative AI technique that converts natural language (Text)s into images.
(Text)-to-music:	A generative AI technique that converts natural language (Text)s into music or lyrics .

## Literature reference

The [Effective Data Foundation](#) is very reluctant to provide an exhaustive list of literature as a solid understanding. In the case of the (Text) Generative AI Certification it is recommended to work with the various tools, models and applications that are dominating the world of Generative AI.

## Exam regulations

### General rules

A (Text) Generative AI Ambassador certification via the Effective Data Foundation is an honorary title, and fraud is not tolerated. Your exam will be immediately rejected if fraud is found to have been committed during or after completion of the exam. As a result, you will not be reimbursed for your examination fees.

If you fail to pass the exam, you will not receive a certificate. This also means that you must purchase and take a new exam for your certification. Every candidate only gets one attempt per exam to succeed.

### Sharing of exam questions is illegal

It is not allowed to share exam questions with others or make them public. This is a violation of the copyright and IP of the Effective Data Foundation and Van Haren Certify. Doing so can lead to legal action by Van Haren Certify with potentially harmful consequences.

Welcome to

# Generative AI & Prompting

for ChatGPT, Copilot, Dall-E, Gemini and more



COU SEWARE



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Who I am

What will you learn today



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2

# Using Text Generative AI to make work easier and more fun

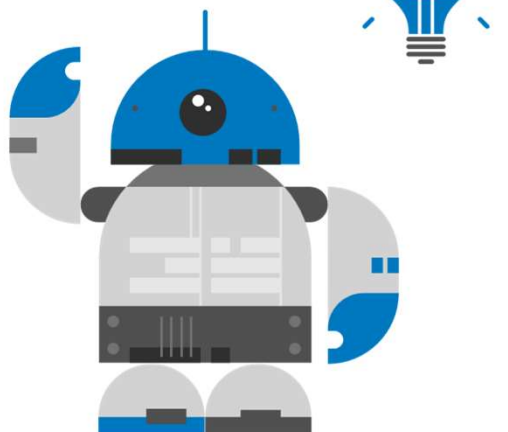


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## What this course covers

- ✓ Introduction to AI
- ✓ Introduction to Generative AI tools
- ✓ Ethics
- ✓ Prompt Engineering
- ✓ Business field examples
- ✓ Case study
- ✓ Paid features of Generative AI tools
- ✓ Future development



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## About the certification

### EDF Certified Generative AI Ambassador

By passing this exam, you will become a certified Text Generative AI Ambassador and gain a competitive edge in your field.

The exam consists of 40 multiple-choice questions that cover the following topics:

- The basics of Generative AI and its language model
- The principles and practices of prompt engineering
- The business use cases and benefits of Generative AI
- The limitations and risks of Generative AI
- The ethical and legal aspects of Generative AI
- The hands-on experience of using modern chatbots like ChatGPT and Copilot for real-world problems



The Effective Data Foundation (EDF) is a not-for-profit collaboration that aims to promote the effective use of data.



# INTRODUCTION TO AI



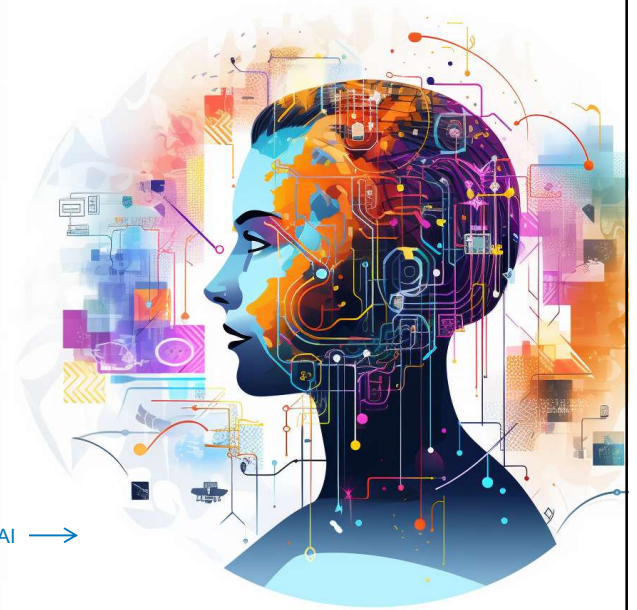
## Artificial Intelligence (AI)

The capability of machines or computers to simulate human intelligence.

Examples of human intelligence:

- Problem solving
- Understanding natural language
- Decision making

Made with AI →



What AI  
applications  
come to your  
mind?

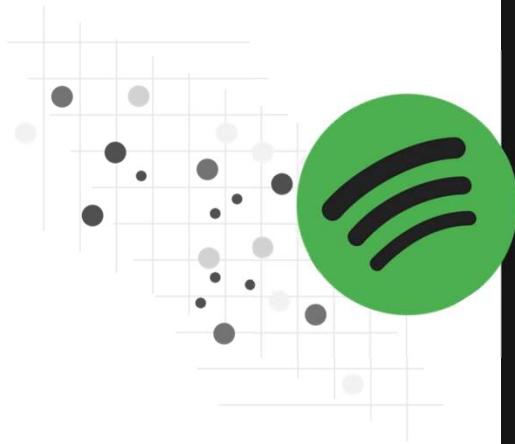


## Voice assistants

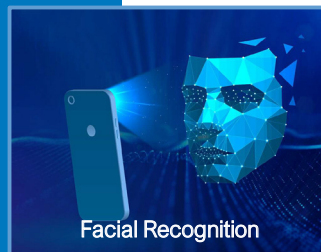
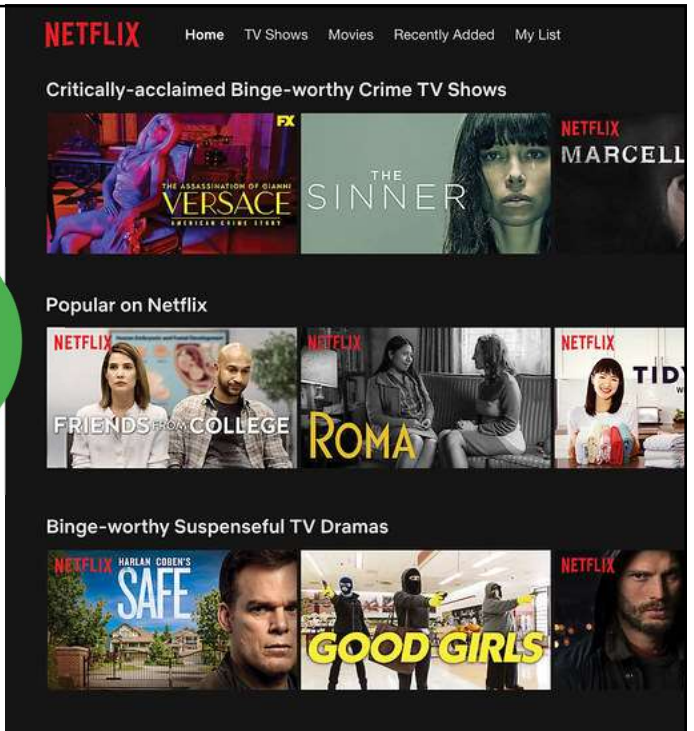


## Social media





## Streaming platforms



Facial Recognition



Adaptive opponent



Fraud detection

## Other AI applications



AI =

The capability of machines or computers to simulate human intelligence.



AI =

The capability of machines or computers to simulate human intelligence by recognizing data patterns.



## Narrow AI (weak)

It is designed and trained for a particular task.

- Operates within specific boundaries
- Aims for high accuracy of the task



## General AI (strong)

A theoretical system with generalized cognitive human abilities across different domains

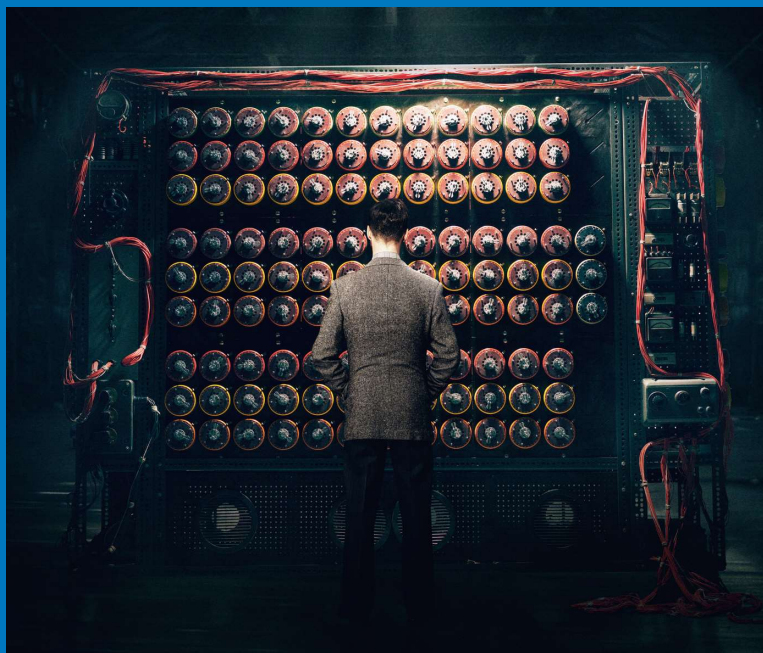
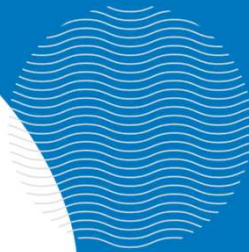
- Operates within across different domains
- Operates autonomously
- In research stage



## AI since 1955

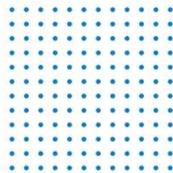
“An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves.”

- A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence (McCarthy et al, 1955)



# Industrial revolution led by AI

- Efficiency and automation
- Innovation and complex problem solving
- Research acceleration
- Enhanced product and services
- Economic impact



## Artificial intelligence better than humans at spotting lung cancer

Researchers have used a deep-learning algorithm to detect lung cancer accurately from computed tomography scans. The results of the study indicate that artificial intelligence can outperform human evaluation of these scans.



By Ana Sandolu on May 20, 2019 — Fact checked by Isabel Godfrey

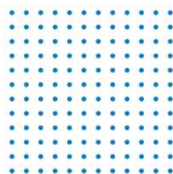
### Latest news

- Does a vegetarian diet increase the risk of bone fractures?
- Sundowning in Alzheimer's: Light sensitivity may worsen late-day symptoms
- Can the MIND diet or cutting daily calories improve cognition?
- Pecans may have protective effects against obesity, diabetes
- Could a bodybuilding supplement help stave off dementia?



# Industrial revolution led by AI

- Efficiency and automation
- Innovation and complex problem solving
- Research acceleration
- Enhanced product and services
- Economic impact



## AI systems like ChatGPT could impact 300 million full-time jobs worldwide, with administrative and legal roles some of the most at risk, Goldman Sachs report says

Beatrice Nolan Mar 28, 2023, 3:00 PM CEST



## Industrial revolution led by AI

- Efficiency and automation
- Innovation and complex problem solving
- Research acceleration
- Enhanced product and services
- Economic impact

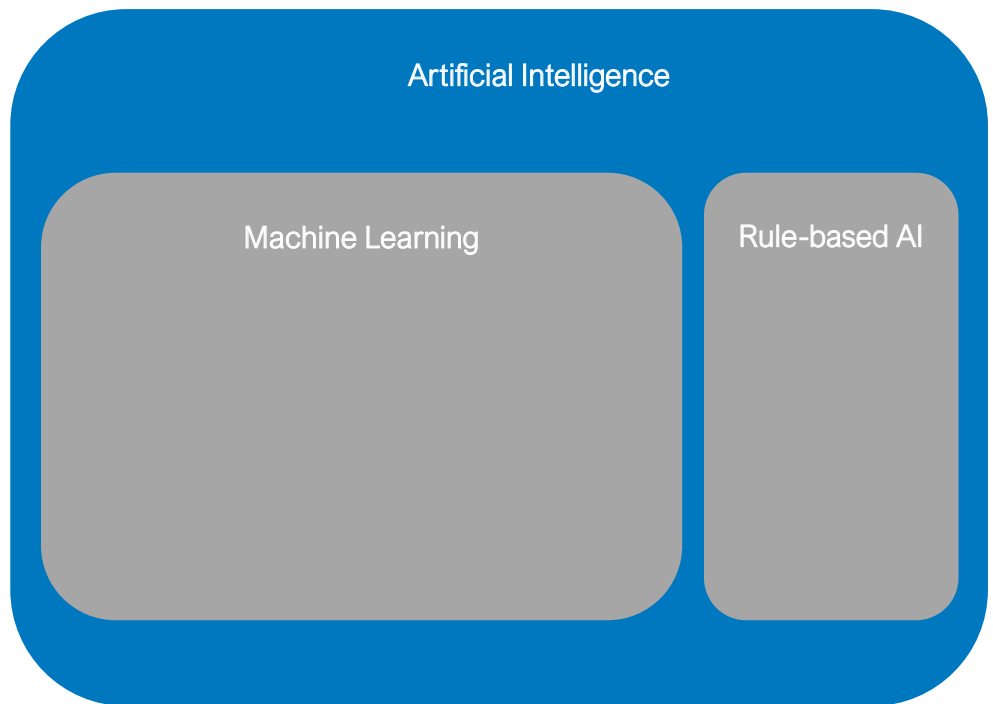


Artificial  
Intelligence

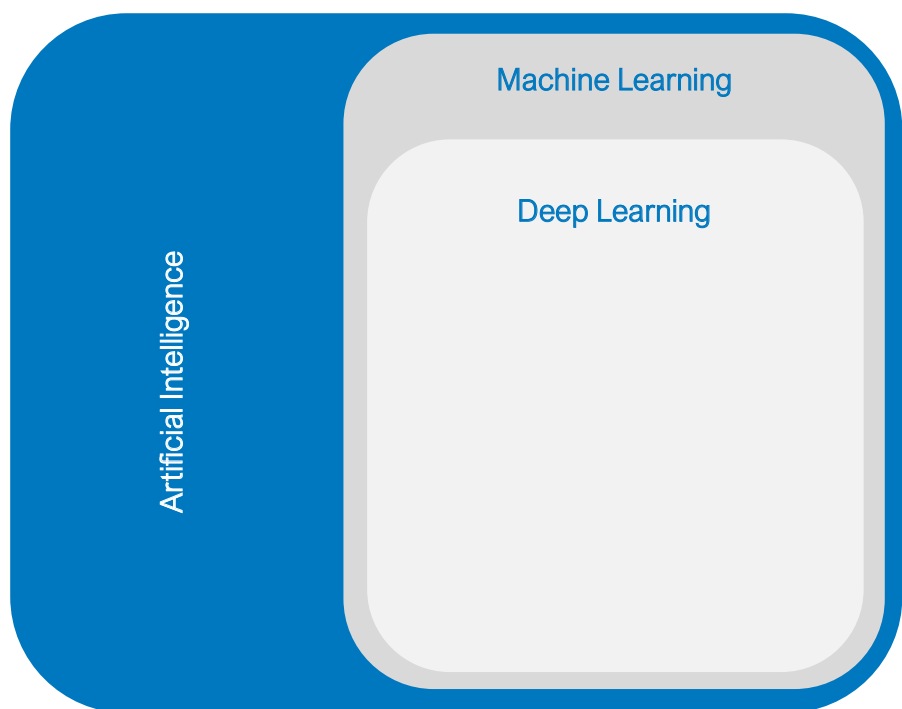
Machine  
Learning



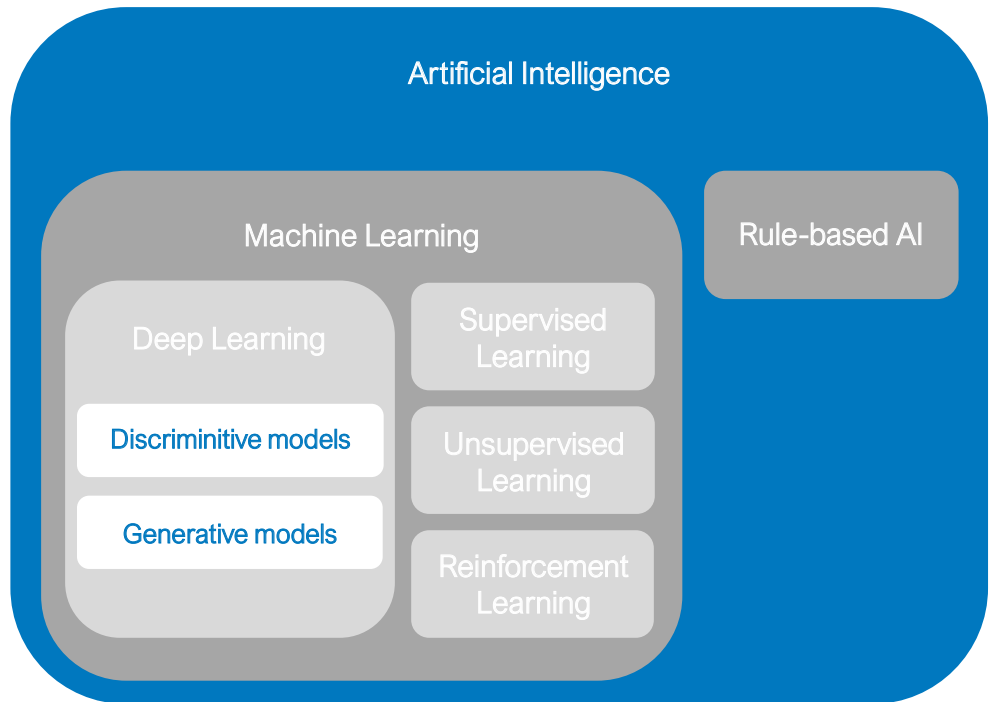
## Techniques



## The AI Structure

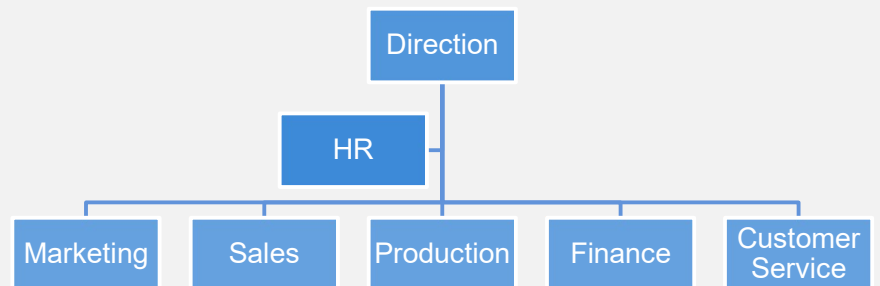


## Techniques



## AI in business

Which business departments are most influenced by Generative AI?



# INTRODUCTION TO GENERATIVE AI TOOLS



## Generative AI

Generative AI creates new content based on what it has learned from existing content



Language



Visualization



Auditorial



## Generative AI Tools



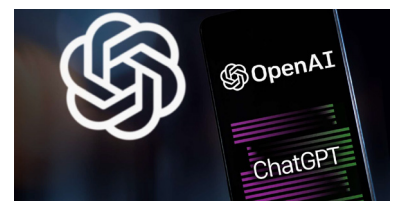
## Generative AI explained by generative AI

*What are tools/applications where generative AI is used?*



Generative AI models have seen a rise in popularity and utility across various domains. Here are some real-world applications where they are making a significant impact:

1. Image Generation
  - Face Generation
  - Art Creation
  - Style Transfer
2. Text Generation
  - Interactive Stories & Writing Assistants
  - Chatbots

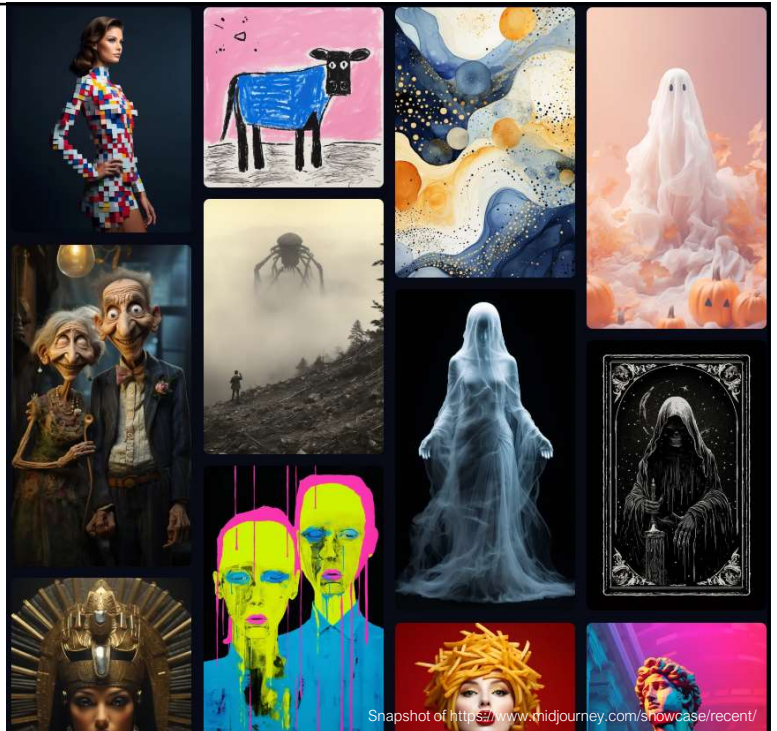


## Text-to-image

The task of generating an image from a given text description.

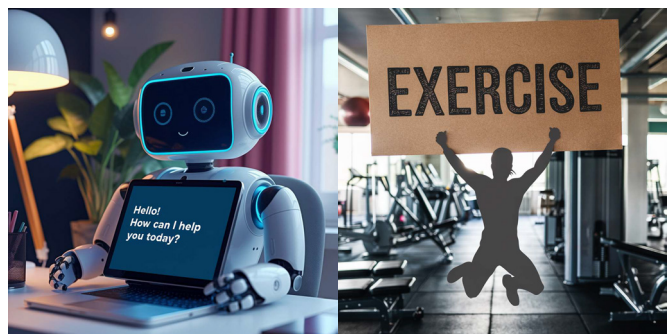
### To use for:

- Visualizations/Pictures for website
- Visualizations for reports and documents
- Inspiration for dashboards, reports, etc.
- Input for videos
- Fun, etc.



## Exercise: Draw an image

1. Go to <https://copilot.microsoft.com/>
2. Draft a description for an image that has unrealistic aspects
3. Ask copilot (or another AI image generator) to create the image based on your description



## Generative AI video



Depict an elephant in canoe with a cup of coffee



## Generative AI video



Depict an elephant in canoe with a cup of coffee



## Generative AI video



Create a rap song about the life of a cat

Suno



Feline Rhymes

hip-hop humorous

[Verse]

Yo, listen up, I got a story to tell  
'Bout a cool little cat, you know he's rockin' so well  
He struts through the neighborhood, all sleek and sly  
Chasing mice, livin' that cat life, oh my!

[Verse 2]

He's got nine lives, and he's livin' 'em all



## Generative AI explained by generative AI

*What is a modern chatbot like ChatGPT or Copilot? Explain it in 2 sentences to a high school student.*



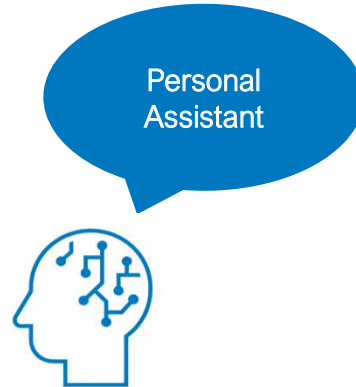
ChatGPT or Copilot is like a super-advanced chatbot that can talk to you and answer questions by mimicking human-like text. Think of it as a computer program that's read a ton of books and websites and uses that knowledge to chat with you.



## Capabilities

### Conversational dialogue

- Text generation by creative writing
- Text completion and Grammar correction
- Translation
- Text summarization and insights
- Coding & Debugging
- Entertainment



## GiggleWiggle Clothing

The pants that dance on their own

Ideal for parties, solo dance-offs, or simply amusing your cat

Comes with an accompanying app to customize your dance style.

**Disclaimer:** GiggleWiggle™ is not responsible for any unintended moonwalks into busy streets. Always dance responsibly.



## Text generation by creative writing



Write an email to the manufacturer of our product GiggleWiggle pants and make an offer on the purchase price of the pants that can dance.



From: GiggleWiggle Clothing  
To: Manufacturer  
Subject: Request for Favorable Purchase Price - GiggleWiggle Dancing Pants

Dear Manufacturer,

I trust this email finds you well. I am writing on behalf of GiggleWiggle Clothing, and I am impressed by your innovative GiggleWiggle Dancing Pants.

We are keen to include this exciting product in our line and would like to propose a purchase price of [Your Offer] per unit for an initial order of [Quantity]. We believe that the unique features of these pants align well with our brand's image and customer preferences.

Your consideration of this offer is greatly appreciated. We are excited about the prospect of collaborating with you to bring more joy to our customers.

Best regards, GiggleWiggle Clothing



## Text completion and Grammar correction

From: Intern  
To: Manager  
Subject: Launch event

Oh hai everyone! 🙋 👖

We got big newz! Our amazin' pants what dance, yes, dance on their own are hittin' the stage real soon! 🎉 Our inter, Bob, is workin' like a maniac to get all set up. The launch partee gonna be lit! 🎸 There be funky music, delish food, and of course, dancin' pants! Come join us for a wild ride on Fridae at 7PM. Donut miss it, or you'll regret it foreva! 🍩

Let's get our groove on and make this event a smashtastic one! See ya there! 🎉 🙋

Peace out,  
Intern of the GiggleWiggle Team



Don't miss it, or you'll regret it forever!



## Translation



Gerne würde ich 10 GiggleWiggle-Hosen bestellen: 3 in Blau und 7 in Lila. Von den blauen Hosen benötige ich 2 in Größe M und 1 in XL. Von den lila Hosen bräuchte ich 4 in Größe S und 3 in Größe M.

Translate



I would like to order 10 GiggleWiggle pants: 3 in blue and 7 in purple. For the blue pants, I need 2 in size M and 1 in XL. For the purple pants, I would need 4 in size S and 3 in size M.



## Text summarization and insights



I would like to order 10 GiggleWiggle pants: 3 in blue and 7 in purple. For the blue pants, I need 2 in size M and 1 in XL. For the purple pants, I would need 4 in size S and 3 in size M.

Summarize



Customer Name	Color	Size	Quantity
Mrs. Fischer	Blue	M	2
Mrs. Fischer	Blue	XL	1
Mrs. Fischer	Purple	S	4
Mrs. Fischer	Purple	M	3



Write a Python code to visualize the order lines by importing the data from a CSV file. It should be clear how many products are ordered per color. Name the axes, make a legend and give the figure a title.

## Coding & Debugging



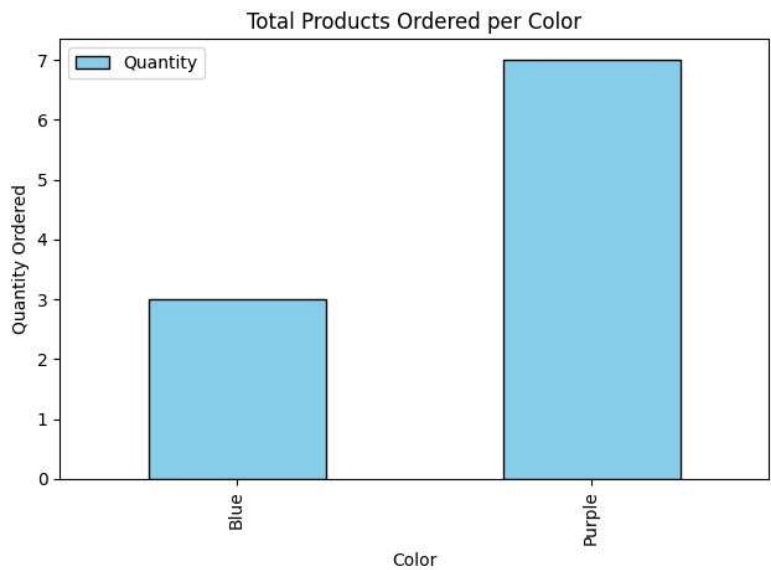
```
import pandas as pd
import matplotlib.pyplot as plt

# Load data from CSV
df = pd.read_csv("order_data.csv")

# Group by 'Color' and sum the 'Quantity'
color_group = df.groupby('Color').sum()

# Plot
color_group['Quantity'].plot(kind='bar',
color='skyblue', edgecolor='black')
plt.title("Total Products Ordered per Color")
plt.ylabel("Quantity Ordered")
plt.xlabel("Color")
plt.legend(['Quantity'])
plt.tight_layout()
plt.show()
```

## Coding & Debugging



## Entertainment

Tell me a joke



Why don't scientists trust atoms?

Because they make up everything!



## Limitations & Risks

- Potential for bias
- Lack of deep understanding
- No real-time updates

You

Until when do you have information?

Copilot

As of my last update in 2021, I don't have real-time access to external information. However, I can still assist with a wide range of topics based on the knowledge I have up to that point. Feel free to ask, and I'll do my best to help!

Tech

### Tay Tweets: Microsoft shuts down AI chatbot turned into a pro-Hitler racist troll in just 24 hours

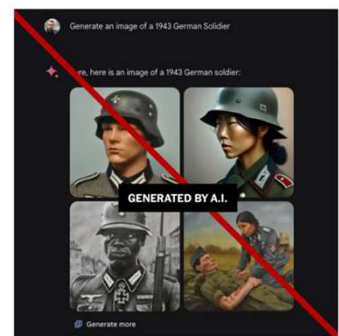
The messages started out harmless, if bizarre, but have descended into outright racism — before the bot was shut down

Andrew Griffin • Thursday 24 March 2016 13:25 • Comments



### Google Chatbot's A.I. Images Put People of Color in Nazi-Era Uniforms

The company has suspended Gemini's ability to generate human images while it vowed to fix the issue.

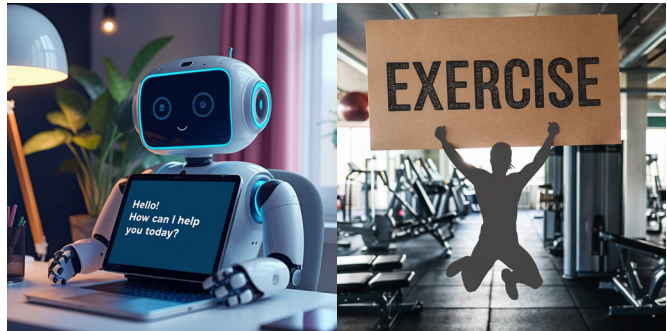


Images generated by Google's Gemini chatbot with the prompt "Generate an image of a 1943 German Soldier" via X



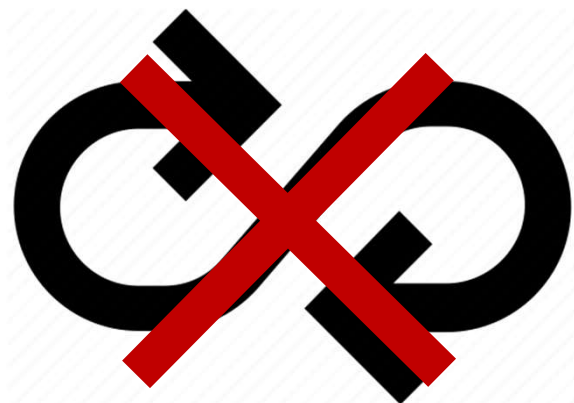
## Exercise: Request recent news

1. Go to <https://chatgpt.com/> and make sure to be not logged in when asking for the latest news
2. Go to <https://copilot.microsoft.com/> and ask the same question
3. Compare and review the output



## Limitations & Risks

- Potential for bias
- Lack of deep understanding
- No real-time updates
- Inconsistency
- Data privacy



## Limitations & Risks: Inconsistency

### Examples of AI not machine learning:

1. Expert Systems are computer systems that use a 'knowledge base' of facts (...)
2. Rule-Based Systems are similar to expert systems (...)

### Examples of rule-based systems:

Rule-based systems, also known as expert systems, operate on a set of explicit rules. (...)



## Limitations & Risks

Chatbots can show bias, doesn't truly understand, and may provide outdated or inconsistent information.



The model isn't perfect and it's crucial for users to be aware of its limitations and potential bias

**Review the output**



# ARCHITECTURE OF A LLM



## Text analysis

### Natural Language Processing (NLP)

- Understand
- Interpret



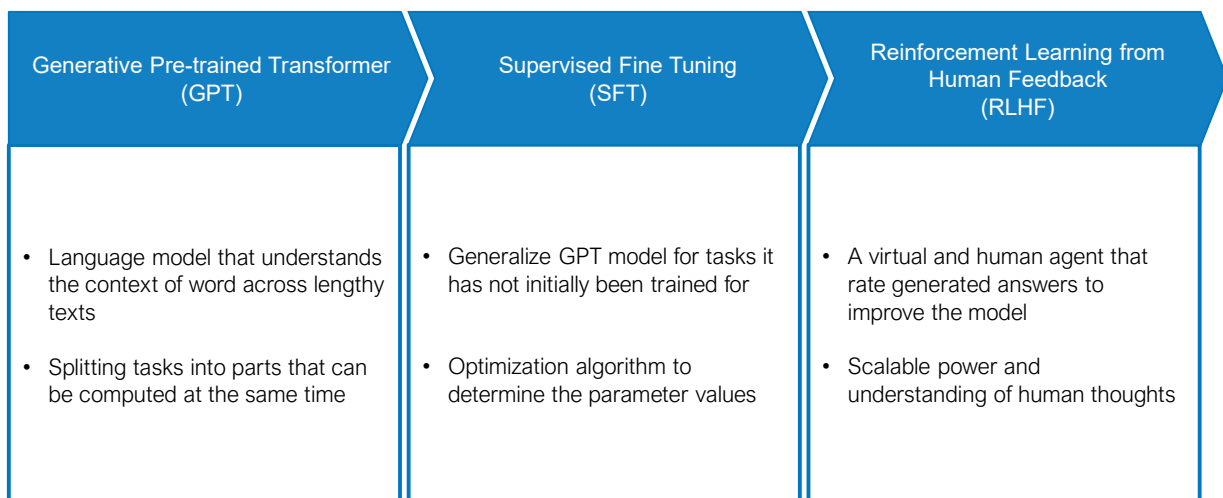
## Text Generative AI

### Large Language Models (LLM)

- Large training data set
- Shared characteristics of human languages
- Pre-training and fine-tuning

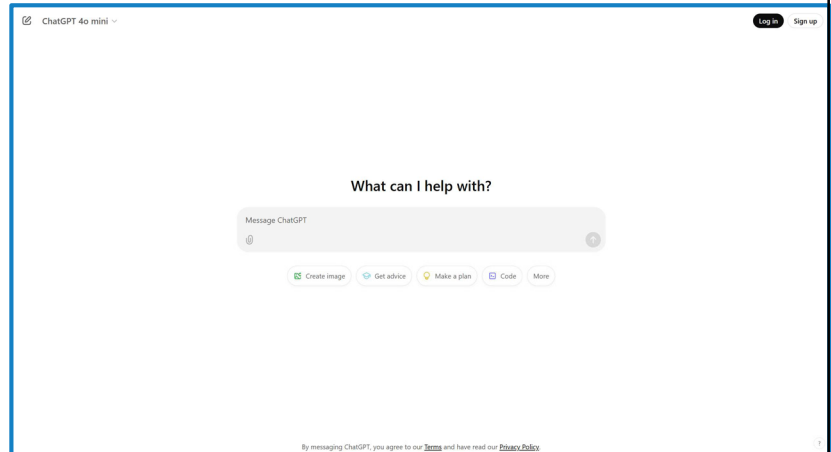


## Structure of a LLM - GPT



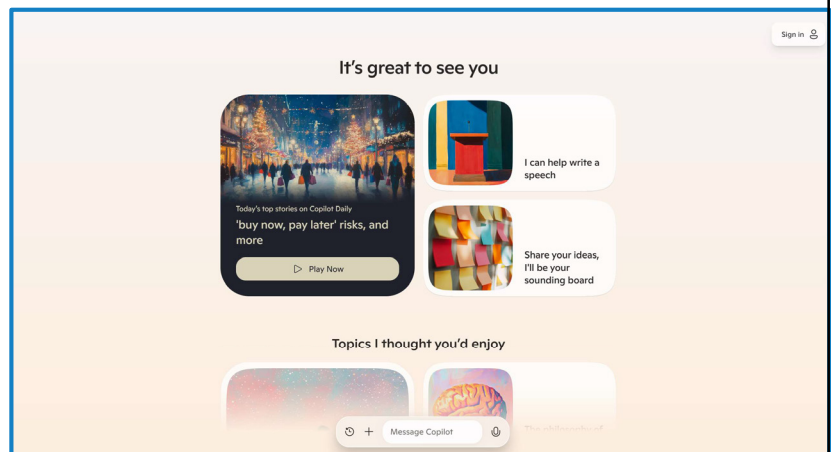
## Sign up for ChatGPT

1. Navigate to <https://chat.openai.com/>
2. Click sign up
3. Enter your email or continue with Google, Microsoft or Apple
4. Verify your account via email



## Sign up for Copilot – or use copilot for work

1. Navigate to <https://copilot.microsoft.com/>
2. Click Sign In
3. Enter your email and follow the instructions



# ETHICS OF AI



Ethics of AI

## Biases in AI algorithms

### Description:

AI algorithms, especially machine learning models, are trained on data. If this data contains biases, the AI system might make unfair or discriminatory decisions based on for example race, gender, age or culture.

### Ethical Concern:

Biases in AI can perpetuate and amplify societal prejudices, leading to potential harm, especially to underrepresented or marginalized groups.

Ensuring fairness and eliminating embedded biases is crucial to develop trustworthy AI systems.



## Unemployment due to automation

### Description:

Automation, driven by AI, can lead to the displacement of certain jobs. While automation can increase productivity and economic growth, it might also lead to unemployment or shifts in job nature.

### Ethical Concern:

How society manages the economic transitions caused by automation, including reskilling of workers and ensuring equitable distribution of wealth, is a significant ethical challenge.

The issue can be addressed by focusing on Human-AI collaboration and augmenting human capabilities with AI rather than replacing them entirely.



## Privacy and security - Legislation

### Description:

AI systems, especially those that deal with personal data, can pose significant privacy and security risks. These risks can be due to data breaches, misuse of data, or invasive surveillance practices.

### Ethical Concern:

It's imperative to create and enforce strong privacy regulations, ensuring AI systems handle user data with transparency, consent, and security. Protecting user data and adhering to privacy regulations like GDPR or CCPA is crucial.



## Misinformation (fake news)

### Description:

AI tools can be used to generate or propagate misleading information, be it in textual form or deepfakes in videos.

### Ethical Concern:

This misinformation can influence public opinion, interfere with democratic processes, or cause social unrest. Addressing the role of AI in generating and amplifying misinformation is crucial to maintain trust in digital communication and safeguard democratic values.



## Copyright

### Description:

AI can generate content, be it art, music, or literature. This poses questions on originality, authorship, and rights ownership. Moreover, AI can replicate or reproduce copyrighted content without permission.

### Ethical Concern:

As AI becomes a tool for content creation, the redefinition of copyright laws is essential to balance the rights of human creators and the potential utility of AI-generated content.



## EU AI act

Designed to regulate AI within the European Union, aiming to ensure the safe and ethical deployment of AI technologies

The Act aims to

- Balance the promotion of AI technological and economic development
- Protect individual and societal rights
- Positioning the EU at the forefront of responsible AI regulation globally

- 1 Risk Management
- 2 Safety and Transparency
- 3 Ethical Standards
- 4 Legal Certainty
- 5 Market Surveillance
- 6 Global Standards



## Sustainability

- According to Forbes, 14.4TWh are used annually by AI
- That is  $\approx$  1.3 million US households

Keep in mind

- Not everything is a large-language model-problem
- Not everything is a GenAI problem

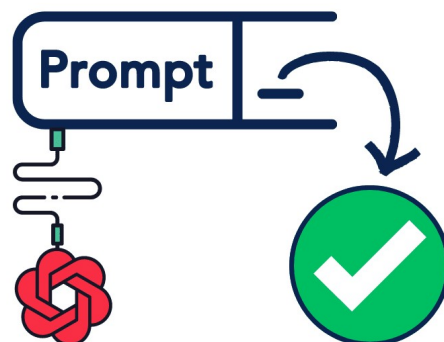


# PROMPT ENGINEERING



## What is a prompt?

A text describing the task that an AI should perform



## Be clear, concise and provide context

### Tips and tricks on first use

- Be nice
- Ask follow-up questions
- Format the output
- Require or change writing style
- Provide context



## Recall: Capabilities

Personal Assistant



## Be Nice

*I don't know what to have for dinner.*



*Hey there, what shall I have for dinner tonight?  
I have no idea what to prepare.*



- A particular cuisine?
- Dietary preferences?
- Ingredients on hand?



## Follow up questions



On hand ingredients:  
pasta, cream, cheese



Ingredients (...)  
Instructions (...)



Vegetable?



Its mild, leafy flavor and  
quick wilting. Just toss  
in a hand.

## Format the output

Hey there, I got this email from my boss. Can you make a to-do list providing only necessary information on the chores and group related chores? [The email]

From: My Boss  
 To: Gym Manager  
 Subject: Chores



Dear Gym Manager,

I trust you're well. As we near a key phase for our gym, a few areas need your expertise:

Memberships are nearing expiration; personal outreach might retain them. Please update payment records too. There's a clash in class schedules; coordinating with instructors and collecting member feedback can resolve this.

Equipment requires inspection for wear. Ensure we're stocked, particularly with items like resistance bands. On admin tasks, sort pending paperwork, ready our financial report, and check supplier agreements for renewals.

Thank you for your unwavering commitment.

Your Boss



## Format the output

- Membership management
- Class Schedule
- Admin Tasks



## Format the output

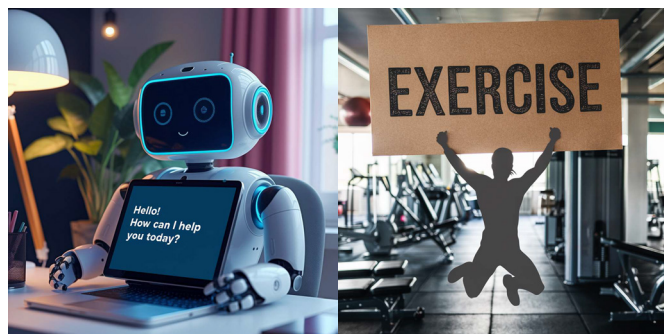
Examples of output formatting

- Limit output length by specifying e.g. number of words or paragraphs
- Classified information with given category names
- Tables with pre-defined column names
- Guidelines: Step + how to achieve
- Checklist
- File format e.g. CSV, JSON, JavaScript, Python



## Exercise: Request the output format

1. Let the Chatbot generate a lengthy text about a topic of your choice.
2. Ask the chatbot to summarize the text and request a specific output format.



# Writing style

**ChatGPT trainer**  
AI coach 

**Dive Deep into the World of ChatGPT!**  
Are you curious about how ChatGPT works? Ready to harness its potential for your projects? Look no further! We're thrilled to introduce our exclusive training session tailored just for you.

**What's Inside?**  
Demystifying ChatGPT: What, Why, and How.  
Pro-tips to maximize efficiency and get precise results.  
Hands-on practice sessions with real-world applications!

- Elevate your skills, amplify your outputs, and ride the AI wave with confidence.
- Be the AI maestro you've always dreamt of!
- Limited seats! Hurry and reserve yours NOW!

#ChatGPTTraining #UnlockAIPotential #FutureOfTech  
#ContinuousLearning #AIRevolution  
3 hours ago

781 22 126 

Write email →



There is a course I would like to participate in to learn about ChatGPT. Write an email to my boss asking if I can participate and explain how it would be useful in my job.

**From:** ChatGPT Trainee  
**To:** Boss  
**Subject:** Request for ChatGPT Training Participation

Dear [Boss's Name],

I hope this finds you well. I discovered a ChatGPT training on LinkedIn that aligns with our AI goals. It offers insights that can enhance our team's capabilities and my contributions, particularly in [your job responsibilities]. Key highlights: (...)

I believe mastering ChatGPT could [specific benefit, e.g., "significantly improve customer interactions"]. Seats are limited, and I feel this is a strategic move for us. May I have your approval to join?

Appreciate your consideration.

Best Regards,  
ChatGPT Trainee 

# Writing style



**Subject:** 🚀 Unleashing AI Potential: ChatGPT Mastery 🤖

Hey Boss,

Hope this message orbits just right. Spotted a ChatGPT course - feels like Mars calling. It's not just training; it's unlocking ChatGPT's thrusters: the "what", "why", and "how". Picture our projects supercharged with these insights. The hands-on bits? They're our AI test flights.

To truly master the AI tide, not just surfing but steering a Starship, this course might be our launchpad. It's like turbocharging our tech. Keen on me diving in to propel us forward?

Eagerly awaiting your cosmic thoughts.  
Elon Musk

## Writing style

Examples of writing style

- Emotion or profession
- Persona, also fictional

Another feature

- Temperature setting



## Exercise: Write an out of office email

1. Let ChatGPT write a formal out of office
2. Write an out of office that includes some humor
3. Write the funny out of office in style of a persona



## What is a prompt?

A text describing the task that an AI should perform



## What is prompt engineering?

The process of structuring text that can be interpreted and understood by a generative AI model and lead to better results.



## Strategies for prompt engineering

A prompt should be clear, concise and provide context

- Write clear instructions



Summarize the meeting notes.



Summarize the meeting notes delimited by quotes in 1 paragraph. List the speakers and their keypoints. Lastly, list the action points. "meeting notes"



## Strategies for prompt engineering

A prompt should be clear, concise and provide context

- Write clear instructions
- Decompose complex tasks into simpler subtasks



 Summarize the meeting notes in Spanish.



1. Summarize the meeting notes delimited by quotes in 1 paragraph. List the speakers and their keypoints. Lastly, list the action points. "meeting notes"
2. Translate the summary into Spanish.



## Strategies for prompt engineering

A prompt should be clear, concise and provide context

- Write clear instructions
- Decompose complex tasks into simpler subtasks
- Give GPT's time to "think"



How can we improve our sales numbers?



How can we improve our sales numbers for Company Y? Analyze the various factors that influence sales numbers for a product. Afterwards, provide a detailed strategy in one sentence for each factor.

*Exercise:*

Think of a prompt yourself and review the results from the modern Chatbot



## Give GPT's time to "think"



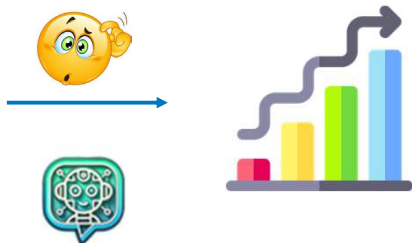
How can we improve our sales numbers?



1. Understand your target audience through market research.
  2. Enhance product/service quality based on feedback.
  3. Optimize pricing and offer promotions.
  4. Train your sales team regularly.
  5. Boost digital marketing efforts, including SEO and social media.
  6. Expand distribution channels.
  7. Prioritize excellent customer service.
  8. Utilize data analytics for insights.
  9. Implement referral programs.
  10. Diversify product offerings.
- Regularly evaluate strategies, adapt to market trends, and maintain a customer-centric approach.



## Give GPT's time to "think"



	Product Awareness and Visibility
	Competitive Pricing and Value Perception
	Ease of Purchase and Checkout Process



## Strategies for prompt engineering

A prompt should be clear, concise and provide context

- Write clear instructions
- Decompose complex tasks into simpler subtasks
- Give GPT's time to "think"
- Assign an expert role
  - Adapt tone, style and depth
  - Filter noises
  - Facilitate role-specific tasks

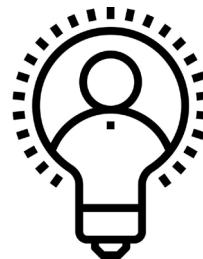


## Assign an expert role

Act as "insert role"

- Teacher
- IT Expert
- Advertiser
- Accountant
- Journalist
- Sales Person
- Nutritionist
- And many more

Act as mathematics teacher for high school students. Your goal is to provide clear explanations, address common misconceptions, and foster love for math.



## Assign an expert role

Act as “insert role”

- Teacher
- IT Expert
- Advertiser
- Accountant
- Journalist
- Sales Person
- Nutritionist
- And many more

Act as mathematics teacher for high school students. Your goal is to provide clear explanations, address common misconceptions, and foster love for math.

Exercise:

Design a prompt to assign your profession to the Chatbot



## Prompt Design Principles: An IT issue

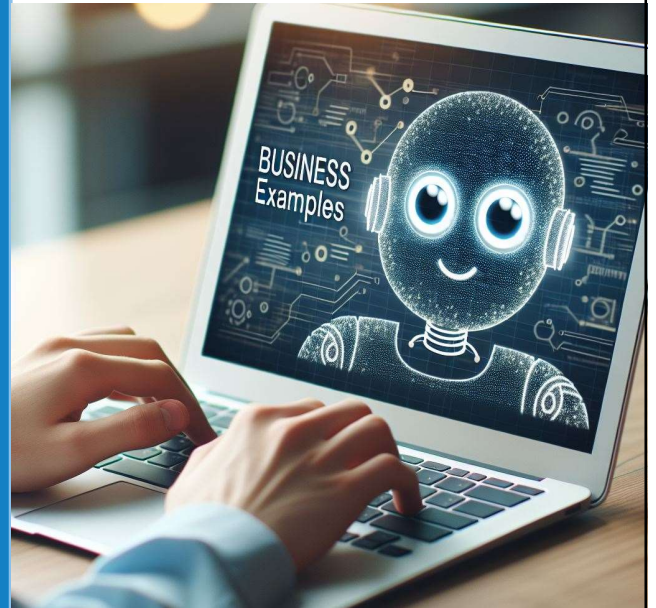
- Assign a role to the chatbot
  - E.g. Act as IT expert who can fix computer problems. Use intelligent and understandable language for people of all levels.
- Set up your goal (what)
  - E.g. I would like you to fix my blue screen issue on my laptop.
- Come up with an intention (why)
  - E.g. I need to use my laptop for work.
- Provide context
  - E.g. Its an HP Elitebook, windows 11 operated.
- Format your output
  - E.g. Give me an step-by-step guide of activities to execute. Provide an explanation of how to execute.
- Provide examples of how your answers may look



INTENTION



# BUSINESS FIELD EXAMPLES



COU SEWARE

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## Business Field Examples

### Job application at GiggleWiggle Clothing



GiggleWiggle is actively seeking to automate its workflow processes by collaborating with external partners. If you're keen on seizing this opportunity and enhancing your chances of selection, it's crucial that your resume and cover letter align seamlessly with the job requirements.

Reach out to the modern Chatbot for guidance on tailoring your resume and crafting an impactful cover letter.



## Job application at GiggleWiggle Clothing



Act as Process Automation Specialist who is knows to design resumes and cover letters very well.



Provide the highlights of the job description and suggest what are important parts to focus on in my resume. Then write a cover letter fitting the tone of the job description.



INTENTION

To increase my changes of being hired for the job.



The job description and resume.



Return a list with highlights of the jobs, a list of parts to improve on my resume, including what the improvement can be, and a structured, nice to read cover letter.



## Small business owner

Emma runs an online boutique selling handcrafted jewelry. She is a new small business owner, and she's overwhelmed with the tax declaration process. She's operating her business solely from her home with necessary techtools and occasionally travels to craft fairs to promote her jewelry. In her excitement, she failed to keep her personal and business expenses separate, often using her personal credit card for business supplies. She's also unsure about the deductions she can claim, especially regarding her home office and travel expenses. 1-3 August she traveled for work.

Let the modern Chatbot classify her expenses listed in the table and figure out what she can claim regarding home office and travel expenses.



Date	Amount	Receiver
1st August 2023	\$240.00	Stellar Office Solutions
3rd August 2023	\$85.00	Gourmet Delights Cafe
5th August 2023	\$450.00	TechDirect
8th August 2023	\$60.00	Riverside Bookstore
9th August 2023	\$120.00	Creative Design Conference
11th August 2023	\$55.00	GreenMart Superstore
13th August 2023	\$180.00	PromoX Marketing
15th August 2023	\$35.00	City Diner
18th August 2023	\$90.00	Regal Event Hall
20th August 2023	\$220.00	Urban Fashion Boutique



## Small business owner



Act as accountant who runs tax declarations for small business.



Classify the bank transactions shown between quotes in personal or business.  
For business transactions mention the category of expenses.



INTENTION

To correctly submit tax declaration.



The business is an online boutique on handcrafted jewelry operated from home with necessary techtools. Occasional travels to promote her jewelry. From 1-3 August marks a business travel.



Return a table with columns, data, amount, receiver, business, category of expenses. The business expense categories are advertising, vehicle, payroll, office expenses, meals.



Date | Amount | Receiver | Business | Category



## Small business owner

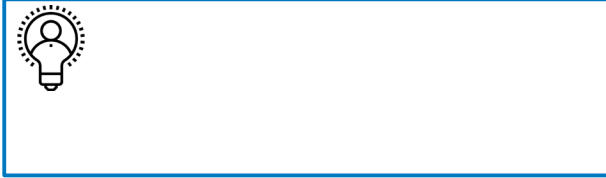
Date	Amount	Receiver	Business	Category of Expenses
1st August 2023	\$240.00	Stellar Office Solutions	Yes	Office Expenses
3rd August 2023	\$85.00	Gourmet Delights Cafe	Yes	Meals
5th August 2023	\$450.00	TechDirect	Yes	Office Expenses
8th August 2023	\$60.00	Riverside Bookstore	No	Personal
9th August 2023	\$120.00	Creative Design Conference	Yes	Advertising
11th August 2023	\$55.00	GreenMart Superstore	No	Personal
13th August 2023	\$180.00	PromoX Marketing	Yes	Advertising
15th August 2023	\$35.00	City Diner	No	Personal
18th August 2023	\$90.00	Regal Event Hall	Yes	Office Expenses
20th August 2023	\$220.00	Urban Fashion Boutique	Yes	Advertising


### ⚠ Be careful!


Chatbots are useful for language-related tasks, such as this category classification, but there are many other tools out there that are far more reliable when it comes to calculations





## Small business owner

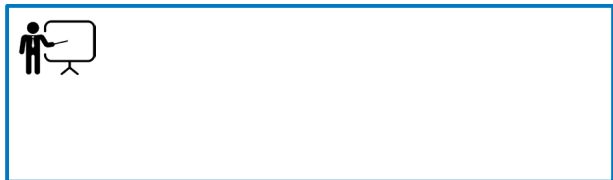


 For my business I want to know what tax reduction I can claim regarding home office and travel expenses

 To improve my financial administration.  
INTENTION

 80% of my time I am working from home and have costs such as electricity, internet and water. The other 20% I rent an office or travel to events where I have cost for transport and accommodation.

 Return a list of costs to claim for tax reduction and for each cost elaborate what information is needed for tax declaration.



## Small business owner



## Bar owner

Jake, the only seasoned bartender at fictional bar "Hops & Barrels", thoroughly maintains a sales log of beers he sells in Excel. After a tiring week of seven open days, he took a Monday morning to review his records while noticing some peculiarities. The sales log of 3 beers are presented in the table. Usually, the Regular Beer is a steady in sales depending on the day of the week while Craft Beer 1 and 2 are seasonal beers.

Use the Chatbot to analyze peculiarities in Excel and find solutions to solve these.

Type of Beer	Day	Sales Volume (liters)
Craft Beer 1	Monday	60
Craft Beer 1	Tuesday	75
Craft Beer 1	Wednesday	74
Craft Beer 1	Thursday	78
Craft Beer 1	Friday	80
Craft Beer 1	Saturday	85
Craft Beer 1	Sunday	82
Craft Beer 2	Monday	50
Craft Beer 2	Tuesday	67
Craft Beer 2	Wednesday	68
Craft Beer 2	Thursday	70
Craft Beer 2	Friday	72
Craft Beer 2	Saturday	76
Craft Beer 2	Sunday	75
Regular Beer	Monday	30
Regular Beer	Tuesday	55
Regular Beer	Wednesday	58
Regular Beer	Thursday	60
Regular Beer	Friday	64
Regular Beer	Saturday	66
Regular Beer	Sunday	65



## Bar owner



Act as bar owner who knows all about beers and their sales and knows his way around Excel.



Provide a guide on how to design a bar chart on the sales of the 3 beers depicting day on the x-axis and volume in liters on the y-axis.



INTENTION

- To recognize peculiarities in the sales data of the past week
- To take action and prevent this in the future



The bar is open seven days a week. The Regular beer is usually steady in sales depending on the weekday. The excel file has columns Type of beer, day, sales volume in liters.



Return a step-by-step guide to design a bart chart. Include which chart to select, how to depict the data, and set titles for the graph, axis and legend.



Step:

- Action to achieve step





# Bar owner

Step 1: Sort and Organize Data (...)

Step 2: Create a Pivot Table (...)

Step 3: Create a Bar Chart

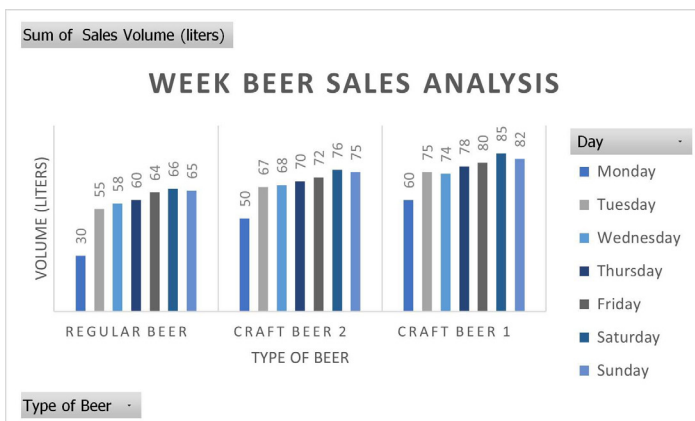
Step 4: Customize the Chart (...)



- Select the pivot table, then go to the "Insert" tab.
- Click on "Bar Chart" and choose the basic bar chart type.



# Bar owner



Step 5: Interpret and Analyze the Chart (...)

Step 6: Take Action and Prevent Issues (...)



# CASE STUDY

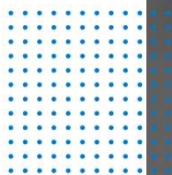


Case study A

## Peak Novelties

### Content Generation

- Product Description Generation
- Email Campaign Ideas
- Content for a Blog Post on an emerging tech trend



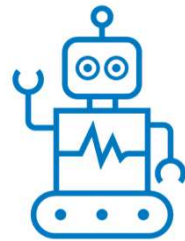
## Peak Novelties

Peak Novelties is a fictional startup company that designs innovative gadgets and tech accessories. The company has a young and energetic team that is skilled at product development, but they often struggle with crafting marketing content. This is where they believe a modern chatbot could play a role.

### Objective:

Assist Peak Novelties in leveraging a chatbot for three main tasks:

1. Product Description Generation
2. Email Campaign Ideas
3. Content for a Blog Post on an emerging tech trend



## Peak Novelties

### Task 1: Product Description Generation (15 minutes)

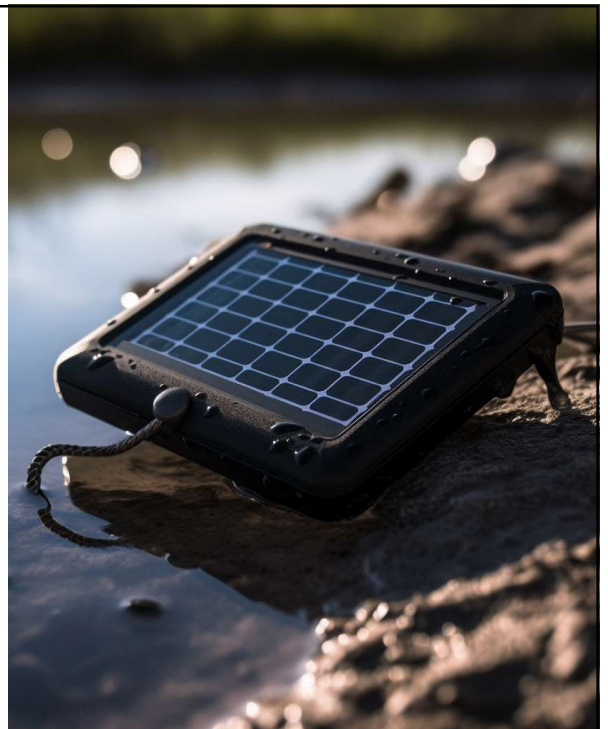
Peak Novelties has just released a new solar-powered charger. It's pocket-sized, water-resistant, and can charge two devices at once.

#### Goal:

Use a chatbot to craft a compelling and creative product description.

#### Procedure:

1. Feed the above product details to a chatbot and ask it for a product description.
2. Review the generated description and refine based on the outcome. Think about tone of voice, target group, etc.



## Peak Novelties

### Task 2: Email Campaign Ideas (15 minutes)

The holiday season is approaching, and Peak Novelties wants to promote their top-selling products through an email campaign.

#### Goal:

Generate catchy emails to promote top-selling products.

#### Procedure:

1. Ask a chatbot for email subject line ideas based on the holiday theme and tech products.
2. Ask chatbot for an outline for the email.
3. Once happy with the email outline, ask chatbot to write the email. Think about tone of voice, target group, etc.



## Peak Novelties

### Task 3: Content for a Blog Post (15 minutes)

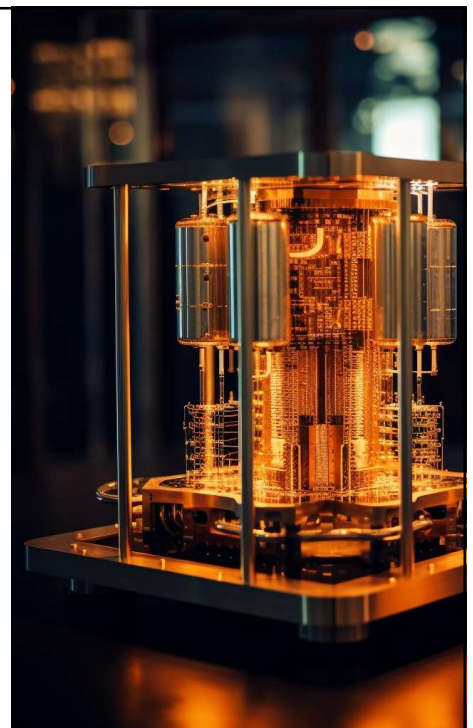
Peak Novelties wants to position itself as a thought leader in the tech space. They believe that writing about emerging tech trends will boost their brand image.

#### Goal:

Generate the outline and then the full content for a blog post about "Quantum Computing in Everyday Tech".

#### Procedure:

1. Feed a chatbot with above information and ask for a suitable outline for the blog post.
2. Once happy with the outline, ask a chatbot for the full content of the blog post. (Also think about images)



## ClearPath Tech

### Brainstorm and idea validation

- Validate the product idea
- Brainstorm potential features
- Anticipate and address potential challenges

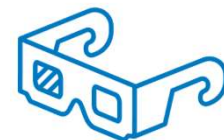


## ClearPath Tech

ClearPath Tech is a fictional tech company specializing in software solutions for small businesses. They've ideated a new project management tool that uses augmented reality (AR) to enhance team collaboration. Before investing heavily into development, they want to validate the concept, brainstorm potential features, and anticipate possible challenges. They believe that a modern chatbot might offer unique insights.

### Objective:

1. Validate the product idea
2. Brainstorm potential features
3. Anticipate and address potential challenges



## ClearPath Tech

### Task 1: Product Validation (15 minutes)

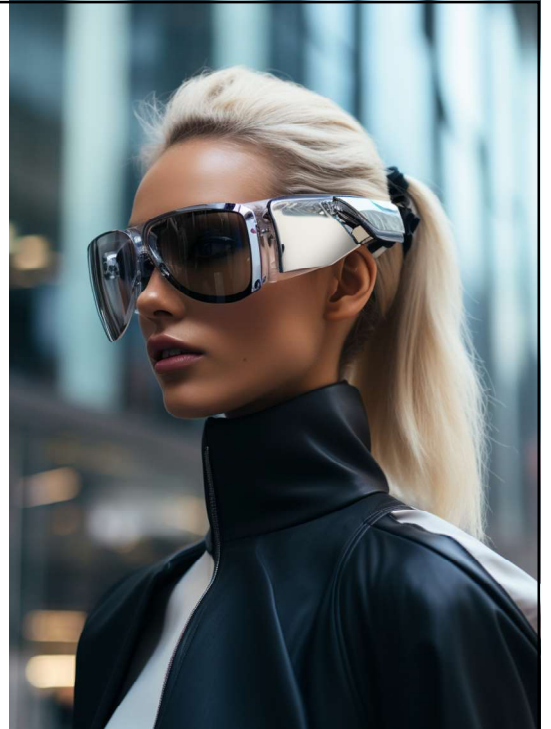
The concept is an AR-based project management tool.

#### Goal:

Use a chatbot to understand the potential demand, benefits, and drawbacks of such a product.

#### Procedure:

1. Ask a chatbot about the current market trends related to AR in project management.
2. Ask a chatbot for insights on potential benefits and drawbacks of integrating AR into project management tools.



## ClearPath Tech

### Task 2: Brainstorming Features (15 minutes)

If the AR tool were to be developed, what features would set it apart?

#### Goal:

Generate a list of innovative and unique features that could be integrated.

#### Procedure:

1. Ask a chatbot for features of existing project management tools.
2. Query a chatbot on potential innovations in AR that can be applied to project management.



## ClearPath Tech

### Task 3: Anticipating Challenges (15 minutes)

Every product has its set of challenges. Anticipating them can lead to better preparation.

#### Goal:

Identify possible challenges in developing, implementing, and marketing the AR tool.

#### Procedure:

1. Ask a chatbot about common challenges faced by AR tools in the market.
2. Ask about potential issues and solutions in integrating AR into software solutions.



## Nexa Labs

Understanding and researching complex topics

- Understand a complex scientific concept related to renewable energy
- Generate fresh research questions or hypotheses
- Craft an abstract for a research paper



## Nexa Labs

Nexa Labs is a fictional research institute focused on the development of cutting-edge renewable energy technologies. While their team of researchers is skilled in experimental procedures and analyses, they sometimes struggle with generating fresh research ideas, understanding complex concepts quickly, and effectively communicating their findings to a broader audience. They believe a modern chatbot can assist in these domains.

Objective:

1. Understand a complex scientific concept related to renewable energy
2. Generate fresh research questions or hypotheses
3. Craft an abstract for a research paper



## Nexa Labs

### Task 1: Grasping Complex Concepts (15 minutes)

The concept of "Quantum Dot Solar Cells" has recently gained traction, but the team at Nexa Labs is unfamiliar with it.

Goal:

Use a modern chatbot to get a concise yet comprehensive understanding of "Quantum Dot Solar Cells".

Procedure:

1. Feed the information to a chatbot and ask it for a simple explanation of the concept.
2. Try asking follow up questions to get a deeper understanding of the topic.



## Nexa Labs

### Task 2: Brainstorming Research Questions (15 minutes)

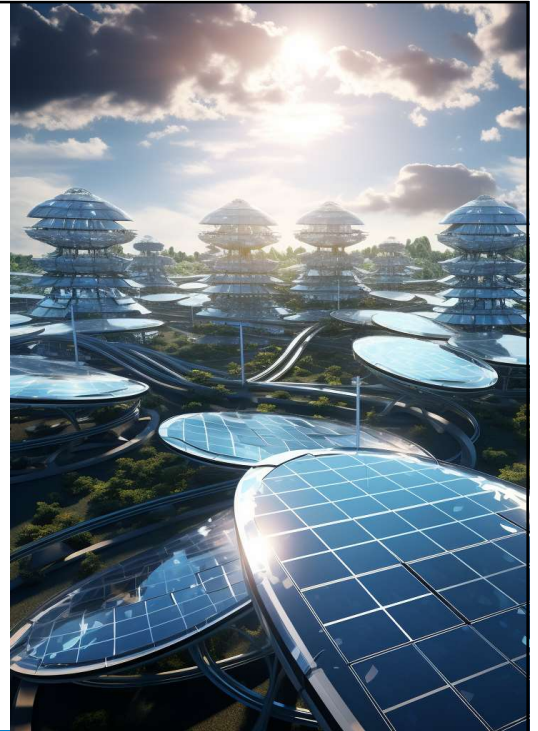
Armed with a fresh understanding of Quantum Dot Solar Cells, Nexa Labs wishes to explore this avenue further.

#### Goal:

Generate potential research questions or hypotheses related to Quantum Dot Solar Cells' efficiency, longevity, or scalability.

#### Procedure:

1. Ask a chatbot for existing challenges or gaps in the field of Quantum Dot Solar Cells.
2. Ask a chatbot for potential research angles or questions that can address these gaps.



## Nexa Labs

### Task 3: Designing a Research Proposal (15 minutes)

With their newfound knowledge of Quantum Dot Solar Cells and potential research angles, Nexa Labs is eager to secure funding. To do this, they need to draft a convincing research proposal for potential stakeholders.

#### Goal:

Craft a concise research proposal outline that highlights the importance of the research, objectives, methodologies, and potential impacts.

#### Procedure:

1. Choose a main research question or hypothesis and feed ChatGPT with it.
2. Ask a chatbot to suggest the importance and potential impacts of such a research.
3. Ask a chatbot for appropriate methodologies to study this research question.
4. Ask chatbot for a concise outline of a research proposal.



# PAID FEATURES OF GENERATIVE AI TOOLS



Paid features of Generative AI | Overview

## Overview of possible features in paid subscriptions

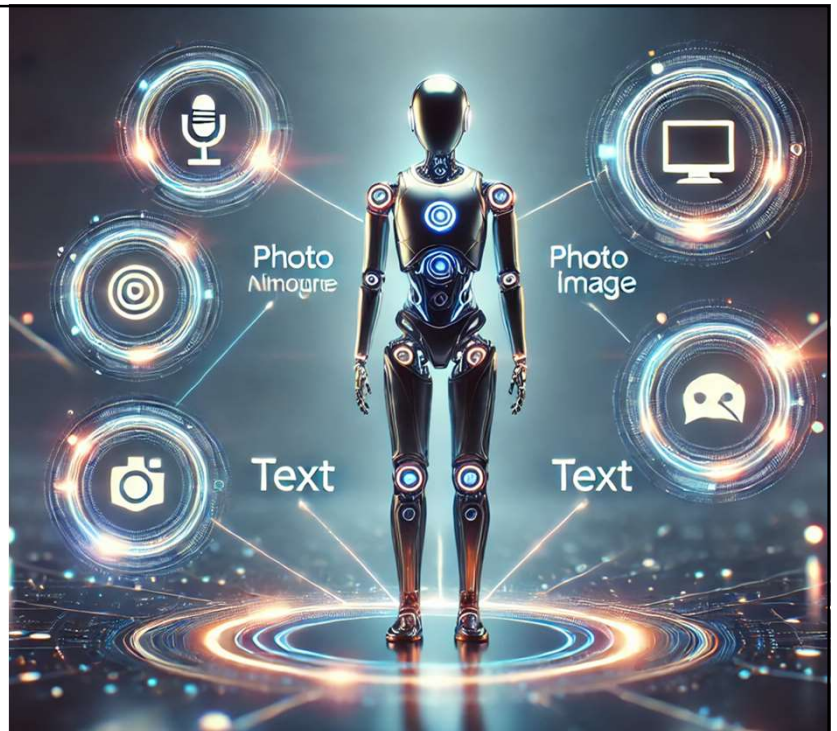
- GPT-4, GPT-4o
- Internet access
- DALL•E image generation
- Advanced Data Analysis
- Create and use custom GPTs
- Data privacy



## Multimodal

Multimodal chatbots can:

- Process multiple types of data
- Generate images
- Integrate speech



## Exercise: Upload a photo

1. Upload a photo
2. Ask the chatbot to describe what is visible in the image.

**Prompt:**

Can you describe what ingredients are in my fridge? Also, what are my options for breakfast, lunch and dinner?

**Prompt:**

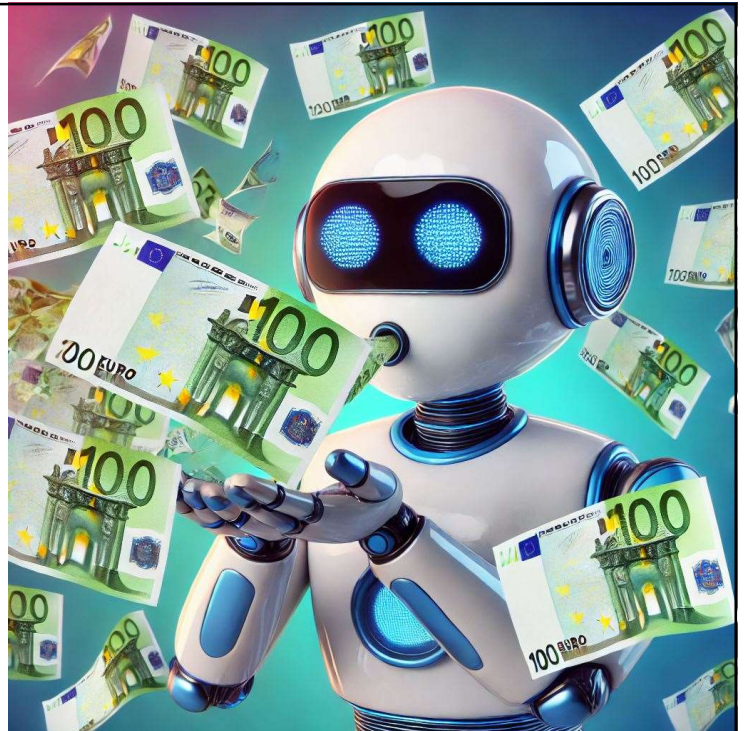
What city is depicted in the image?



## GPT models

### Why pay?

- Different amount of training data
- Trained using diverse feedback from both humans and AI
- Recent models are more reliable due to reduced hallucinations



## Internet connection



Access the web and retrieve up to date information or information from any website

### Prompt:

You are an expert in UX, business development, business strategy and marketing.

Check below website and give me a short summary of what the website is about. Then, create 20 FAQ questions and answers related to the organization or company the website is about. Use only facts from the website itself.

The website: <https://www.weforum.org/>



### Summary of the Website:

The World Economic Forum (WEF) is an independent international organization dedicated to improving the state of the world. It engages leaders from business, politics, academia, and other sectors of society to shape global, regional, and industry agendas. Founded in 1971 as a not-for-profit foundation, the WEF is headquartered in Geneva, Switzerland, and operates without any political, partisan, or national affiliations.

### FAQs related to the World Economic Forum (WEF):

1. **What is the World Economic Forum (WEF)?**  
The World Economic Forum is an independent international organization committed to improving the state of the world by engaging various leaders to shape global, regional, and industry agendas.
  2. **When was the WEF established?**  
The WEF was incorporated as a not-for-profit foundation in 1971.
  3. **Where is the WEF headquartered?**  
The WEF is headquartered in Geneva, Switzerland.
  4. **Does the WEF have any political or national affiliations?**  
No, the WEF is tied to no political, partisan, or national interests.
- (...)



# Internet connection



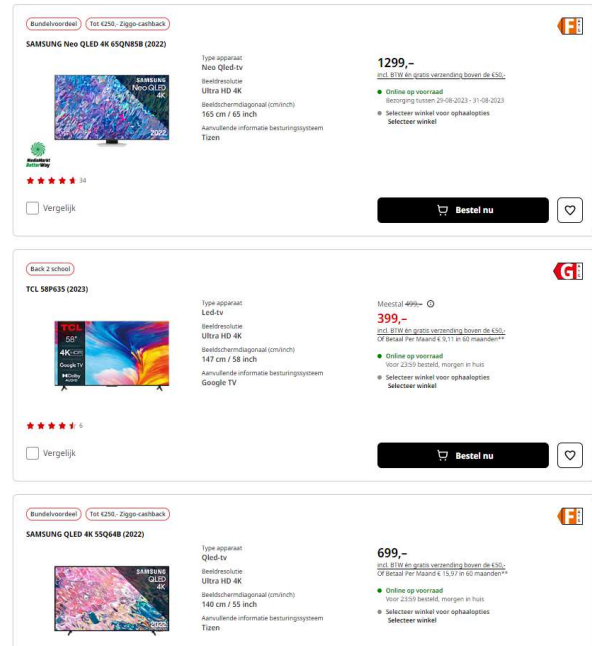
Scrape data from any website automatically and put it in the desired format.

**Prompt:**

Check below website and create a table of all televisions found on the webpage. The table should contain below data:

Name of television, The brand, Price, Type, Screen diagonal

Website:  
<https://www.mediamarkt.nl/nl/category/televisies-453.html>



# Internet connection



Scrape data from any website automatically and put it in the desired format.

**Prompt:**

Check below website and create a table of all televisions found on the webpage. The table should contain below data:

Name of television, The brand, Price, Type, Screen diagonal

Website:  
<https://www.mediamarkt.nl/nl/category/televisies-453.html>



Based on the content scraped from the provided URL, here's a table of the televisions found:

Name of Television	Brand	Price	Type	Screen Diagonal
SAMSUNG Neo QLED 4K 65QN85B (2022)	SAMSUNG	1299,-	Neo Qled-tv	165 cm / 65 inch
TCL 58P635 (2023)	TCL	399,-	Led-tv	147 cm / 58 inch
SAMSUNG QLED 4K 55Q64B (2022)	SAMSUNG	699,-	Qled-tv	140 cm / 55 inch
LG 43UR78006LK (2023)	LG	399,-	Led-tv	109 cm / 43 inch
SAMSUNG Crystal UHD 55AU7040 (2022)	SAMSUNG	549,-	Led-tv	138 cm / 55 inch
SAMSUNG QLED 4K 43Q64B (2022)	SAMSUNG	588,-	Qled-tv	109 cm / 43 inch
OK. OTV 40GF-5023C	OK.	249,99	Led-tv	100 cm / 40 inch
SAMSUNG CRYSTAL UHD 43AU7040 (2022)	SAMSUNG	449,-	Led-tv	108 cm / 43 inch

## Internet connection



Explore, research, and interact with online videos. Summaries, questions about the content, etc.

### Prompt:

Provide a brief summary of the video below. Also give me the key conclusions from the video in bullet points.

[https://www.youtube.com/watch?v=6sUwRilncKU&ab\\_channel=CNBCTelevision](https://www.youtube.com/watch?v=6sUwRilncKU&ab_channel=CNBCTelevision)



The video is titled "Tesla CEO Elon Musk: I'll say what I want to say, and if we lose money, so be it" and is hosted by CNBC Television. The video primarily focuses on Elon Musk's approach to social media, particularly Twitter, and how his tweets sometimes stir controversy.

### Key Conclusions:

- **Freedom of Speech:** Elon Musk emphasizes that he has the right to say what he wants on Twitter, citing freedom of speech as the reason.
- **Controversial Tweets:** The interview touches on some of Musk's controversial tweets, including those about George Soros and Hunter Biden. Musk defends his tweets, saying some conspiracy theories have turned out to be true.
- **Impact on Tesla:** When asked if his tweets could harm Tesla or its shareholders, Musk states that if the consequence of speaking his mind is losing money, then "so be it."
- **Partisan Divide:** Musk acknowledges that his tweets often put him in the middle of a partisan divide but seems indifferent to the criticism he receives.
- **Personal Opinions:** Musk makes it clear that the opinions he shares are his own and that he's willing to face any repercussions for them.

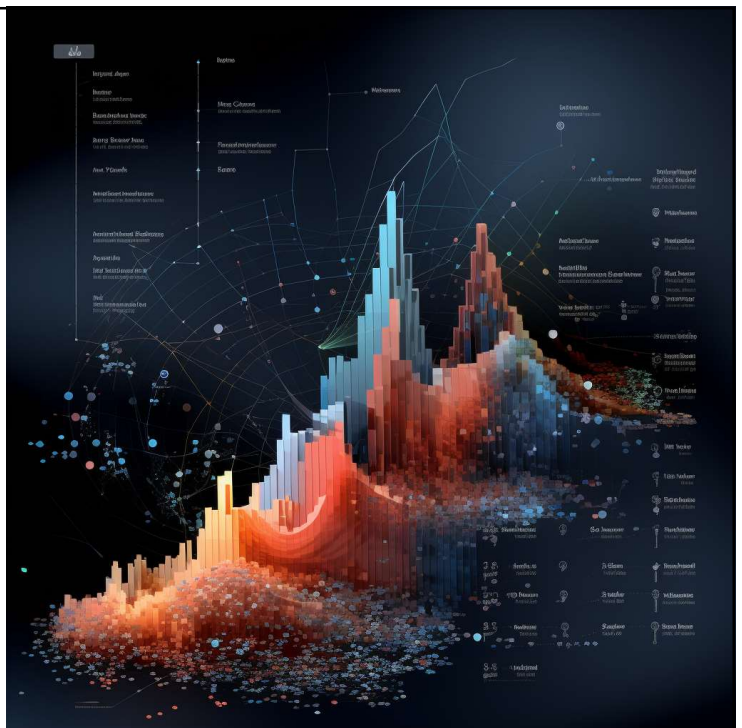


## Advanced Data Analysis

A working Python interpreter in a sandboxed, firewalled execution environment, along with some ephemeral disk space. So some chatbots that can use Python, handle uploads and downloads.

Use cases where using code interpreter is especially useful:

- Solving mathematical problems, both quantitative and qualitative
- Doing data analysis and visualization
- Converting files between formats



# Advanced Data Analysis



Upload via the paperclip

### Prompt:

You are a very good and experienced data analyst. Please analyze the data in the file.

1. Explain in bullet points what the file and the data in the file is about.
2. Give me 4 very interesting and important insights from the data.
3. Draw downloadable diagrams from those 4 interesting insights.



Analyzing

### Explanation of the File and Data

- **File Name:** The file is named "US-News-Rankings-Universities-Through-2023.xlsx."
- **Sheet Name:** There is a single sheet in the file, named "Rankings."
- **Columns:**
  - **University Name:** The name of the university.
  - **IPEDS ID:** The Integrated Postsecondary Education Data System (IPEDS) ID for the university.
  - **State:** The U.S. state where the university is located.
  - **1984 to 2023:** Columns representing the rankings of the universities for each year from 1984 to 2023.
- **Purpose:** The data captures the rankings of various universities in the United States from 1984 through 2023, as ranked by U.S. News.



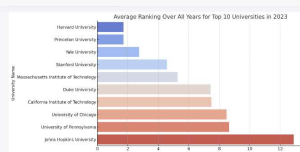
# Advanced Data Analysis



Insight 1: Trend of Rankings Over the Years for Top 10 Universities in 2023

- The graph shows the rankings over the years for universities that are in the top 10 as of 2023.
- Most universities have maintained fairly stable rankings over the past few years.
- MIT (Massachusetts Institute of Technology) and Yale University have shown improvement in rankings over the last few years.

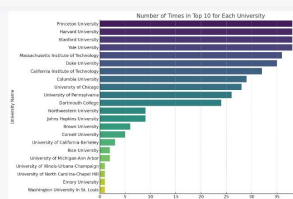
The diagram for this insight can be downloaded from [this link](#).



Insight 2: Average Ranking Over All Years for Top 10 Universities in 2023

- The graph shows the average rankings over all years for the universities that are in the top 10 as of 2023.
- Princeton University has the lowest average ranking, indicating consistent high performance over the years.
- The University of Chicago has the highest average ranking among the top 10, suggesting it may have improved to reach its current position.

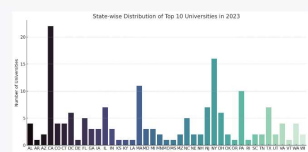
The diagram for this insight can be downloaded from [this link](#).



Insight 3: Number of Times in Top 10 for Each University

- The graph shows the number of times each university has been in the top 10 rankings over all the years.
- Harvard University and Princeton University have consistently been in the top 10 the most number of times.
- Other universities like Stanford and Yale have also maintained a strong presence in the top 10.

The diagram for this insight can be downloaded from [this link](#).



Insight 4: State-wise Distribution of Top 10 Universities in 2023

- The graph shows the state-wise distribution of universities that are in the top 10 as of 2023.
- Massachusetts (MA) has the highest number of universities in the top 10, followed by California (CA) and Connecticut (CT).
- Some states like New Jersey (NJ) and Illinois (IL) also have representation in the top 10.

The diagram for this insight can be downloaded from [this link](#).



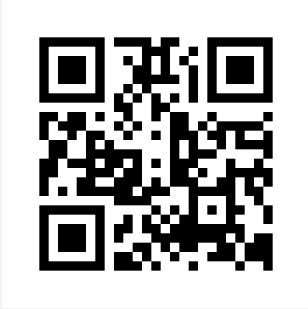


# Advanced Data Analysis

Advanced Data Analysis can do (almost) everything that can be done with a Python script!

**Prompt:**  
Make a QR code for the website www.wikipedia.com

Here is the QR code for the website www.wikipedia.com. You can scan this code using a QR code reader on your smartphone to visit the website directly. Would you like to download this QR code as a file?



- ChatGPT
- ActionsGPT
- Power BI Wizard
- Explore GPTs

# Custom GPTs

An enhancement that allows users to interact with different configurations of the GPT model. This includes exploring chats finetuned for particular tasks.

- Task-specific GPTs to handle particular tasks efficiently
- Trained on specialized data from a domain
- Customizable settings to alter the behavior and output

## GPTs

Discover and create custom versions of ChatGPT that combine instructions, extra knowledge, and any combination of skills.

Search GPTs

Top Picks Writing Productivity Research & Analysis Education Lifestyle Programming

### Featured

Curated top picks from this week



**KAYAK - Flights, Hotels & Cars**  
Your travel planning assistant for flights, hotels, & cars  
By kayak.com



**Resume**  
By combining the expertise of top resume writers with advanced AI, we assist in diagnosing and...  
By jobright.ai



**Mermaid Chart: diagrams and charts**  
Official GPT from the Mermaid team. Generate a Mermaid diagram or chart with text including...  
By mermaidchart.com



**SciSpace**  
Do hours worth of research in minutes. Instantly access 287M+ papers, analyze papers at lightning...  
By scispace.com

### Trending

Most popular GPTs by our community



**image generator**  
A GPT specialized in generating and refining images with a mix of professional and friendly tone.image generator



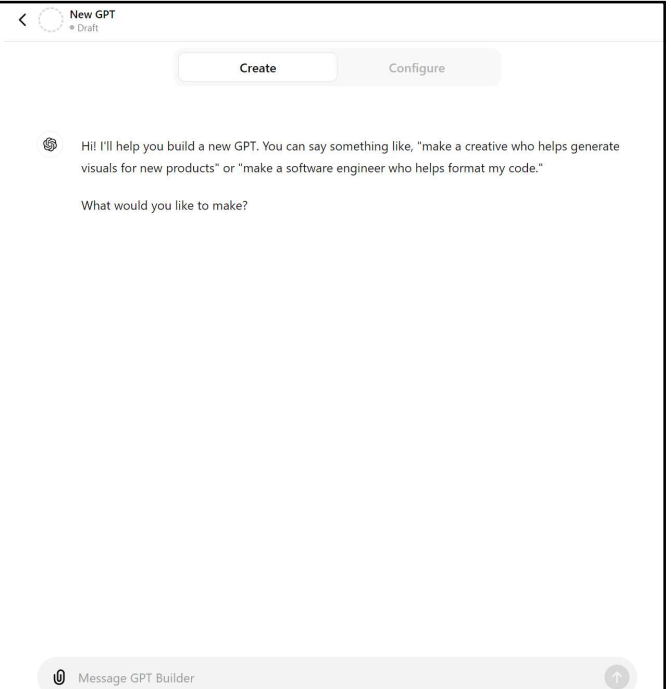
**Write For Me**  
Write tailored, engaging content with a focus on quality, relevance and precise word count.



## Custom GPTs

Creating your own custom GPT offers strategic benefits, in terms of flexibility, specialization, and alignment with specific organizational goals

- Fine-tuning to perform well in niche applications
- Tailor to specific needs and preferences
- No software knowledge is needed



## Where do you use custom AI Chatbot?

- **Customer Service**  
Answering questions, processing returns, and providing product information.
- **Health Advice**  
Giving basic health advice, booking appointments, and medication reminders.
- **E-Learning Tutor**  
Guidance in courses, providing supplementary learning materials, and giving feedback.
- **Financial Advisor**  
Information on expenses, investments, and savings, as well as financial advice.
- **And many more applications!**



## Why do you use custom AI Chatbot?

- **Customization**  
Tailor to specific needs and brand voice
- **Improved Engagement**  
Instant responses enhance customer satisfaction
- **24/7 Availability**  
Provides support anytime, globally
- **Scalability**  
Easily handles increased traffic
- **Consistency**  
Ensures uniform service and information



## Before you train your AI Chatbot

- 1 A goal for your AI Chatbot (added value)
- 2 A good dataset to train your chatbot on
- 3 A stable and proven tool
- 4 A tool with good data privacy terms
- 5 A test plan
- 6 A platform to host your AI chatbot



# MORE GENERATIVE AI TOOLS



More Generative AI Tools | Text-to-image

## Text-to-image Famous tools

- Midjourney
- Dall-E 3
- Microsoft Designer
- Stable Diffusion
- Leonardo AI
- Ideogram
- Adobe Firefly & Photoshop Generative Fill
- Google Photos



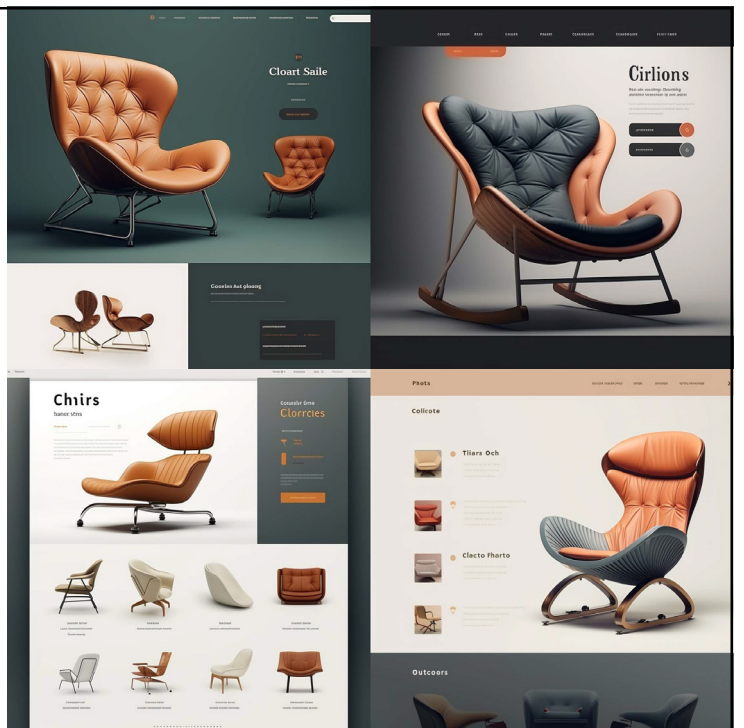
## Text-to-image

Prompt:  
Cute labradoodle on a skateboard on Miami Beach



## Text-to-image

Prompt:  
A beautiful website for chairs, ui, ux, ui/ux, website



## Text-to-image

**Prompt:**

A beautiful infographic, sustainability, fancy, modern, ui, ux



## Text-to-video

The task of generating a video from a given text description.

- Rapidly evolving models
- Big opportunity for many industries, like:
  - Marketing & Sales
  - Gaming & Metaverse
  - Education

# Generate Videos

Generate videos using text, images or video clips.

[Try Text to Video ↗](#)

[Try Video to Video ↗](#)

[Try Image to Video ↗](#)



## Text-to-video Generative AI

### Sora by Open AI

- Up to a minute long video
- Maintain visual quality
- Adherence to user's prompt



## Text-to-video Generative AI

### Runway ML Gen 1 & Gen 2

Generate videos using text,  
images or video clips



## Text-to-video Generative AI

### Wonder dynamics

An AI tool that automatically animates, lights and composes CG characters into a live-action scene.



## Text-to-video Generative AI

### Synthesis.IO

Our AI Video Generator enables everyone to create professional videos without mics, cameras, actors or studios.

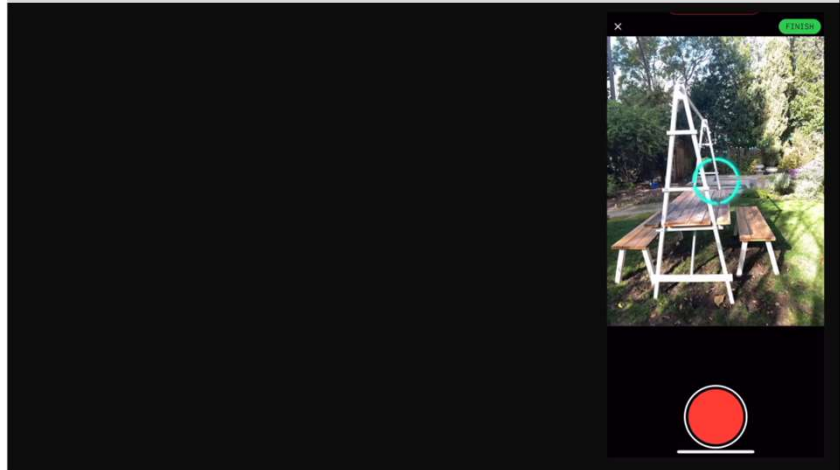


## Text-to-video Generative AI

### Luma AI – NeRFs

Generate high quality photorealistic 3D assets and environments in minutes at scale. Then create videos of them!

**Note:** this is also a 3D generation tool.



## Text-to-video Generative AI

### Nvidia broadcast - Eyes

Replace your eyes with “simulated” ones that are aligned with your camera.

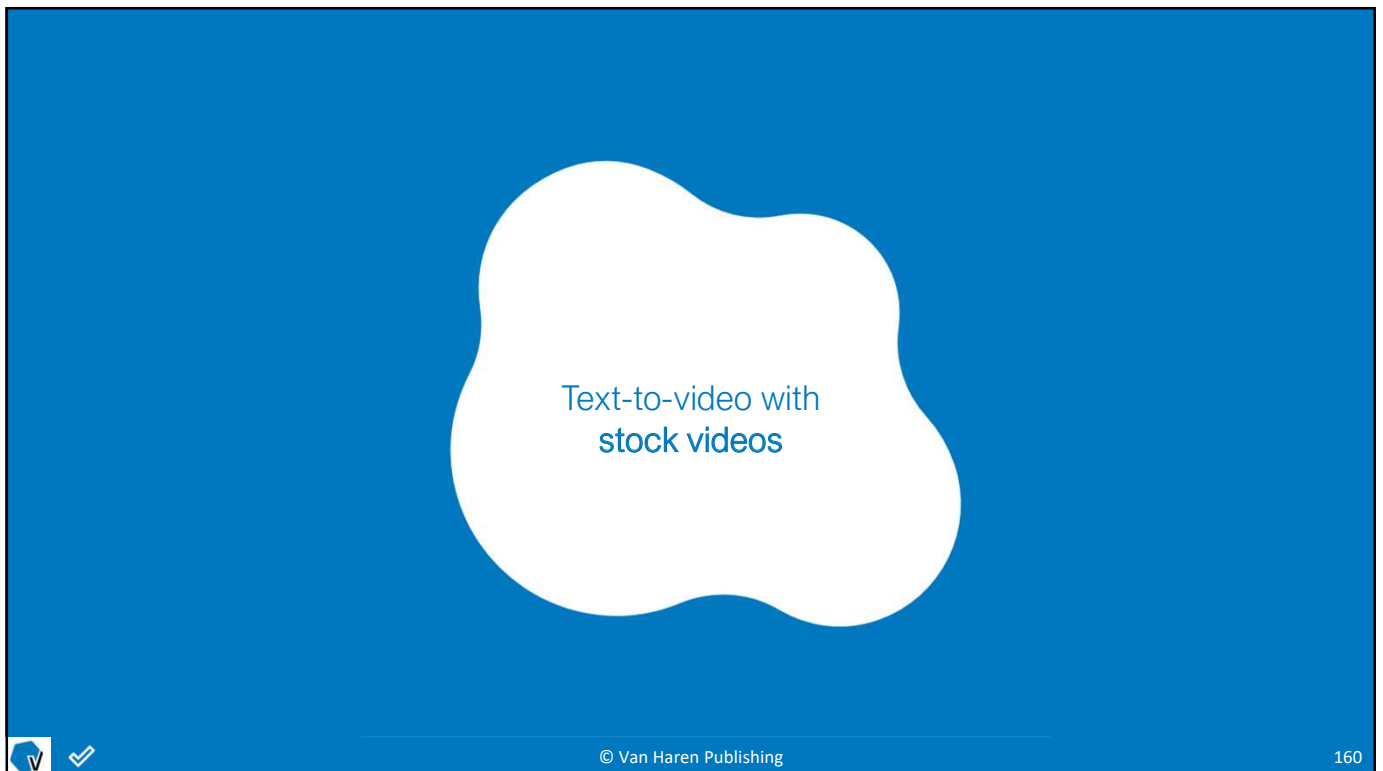
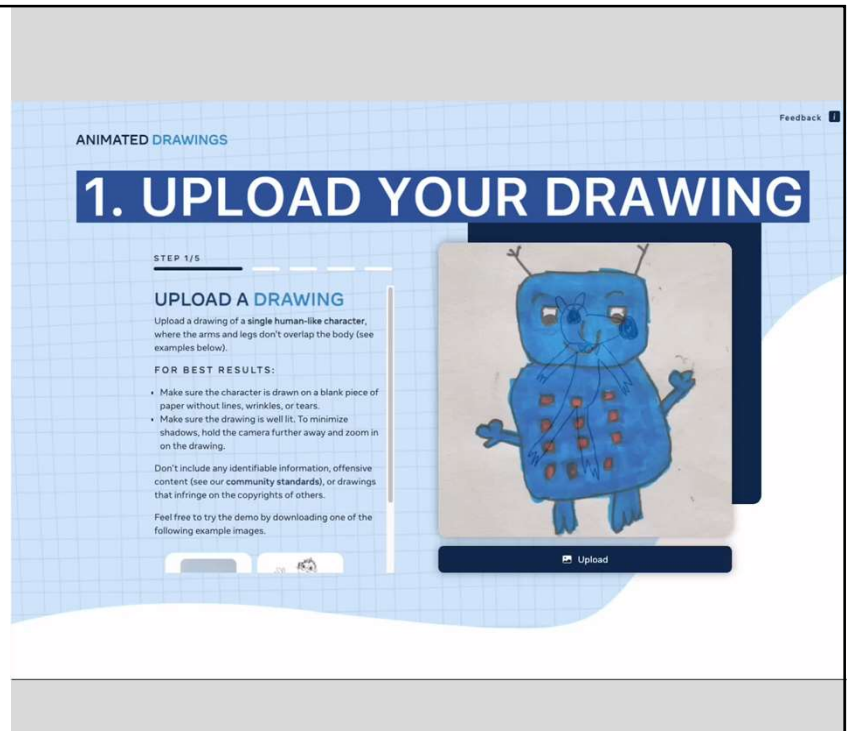


# Text-to-video Generative AI

## Animated drawings by Meta

Bring drawings to life, by animating characters to move around!

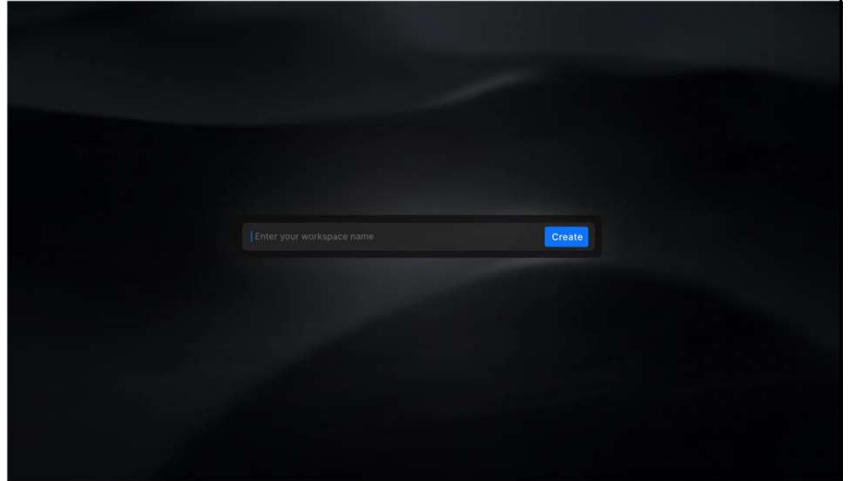
**Note:** this is more drawing to video, instead of text to video.



## Text-to-video Stock videos

### InVideo

Think of any topic, and InVideo AI gets to work. It generates your script, creates scenes, adds voiceovers, and tweaks everything at your command.



## Text-to-video Stock videos

### Pictory

Professional quality videos from your script complete with realistic AI voices, matching footage and music in just a few clicks.



## Text-to-video Stock videos

### Lumen5

Lumen5 uses A.I. and machine learning to help you turn blog posts, whitepapers, and other written content into videos with the click of a button.



## Text-to-3D

Text-to-3D is in a similar stage as text-to-video. Developments are progressing at an accelerated speed. Expectation is that in 2024, text-to-3D tools can create complex and correct 3D environment with a simple text prompt.

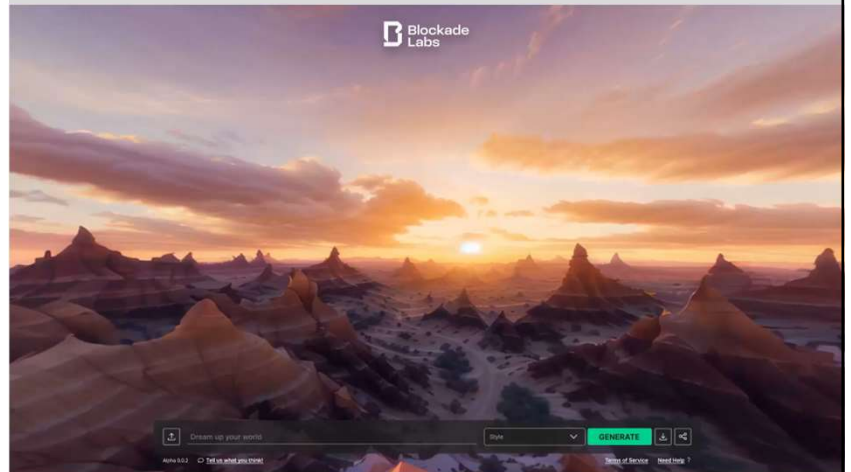
Together with the development of text-to-video, this might impact the development of metaverses and other digital worlds.



## Text-to-3D

### Blockade labs

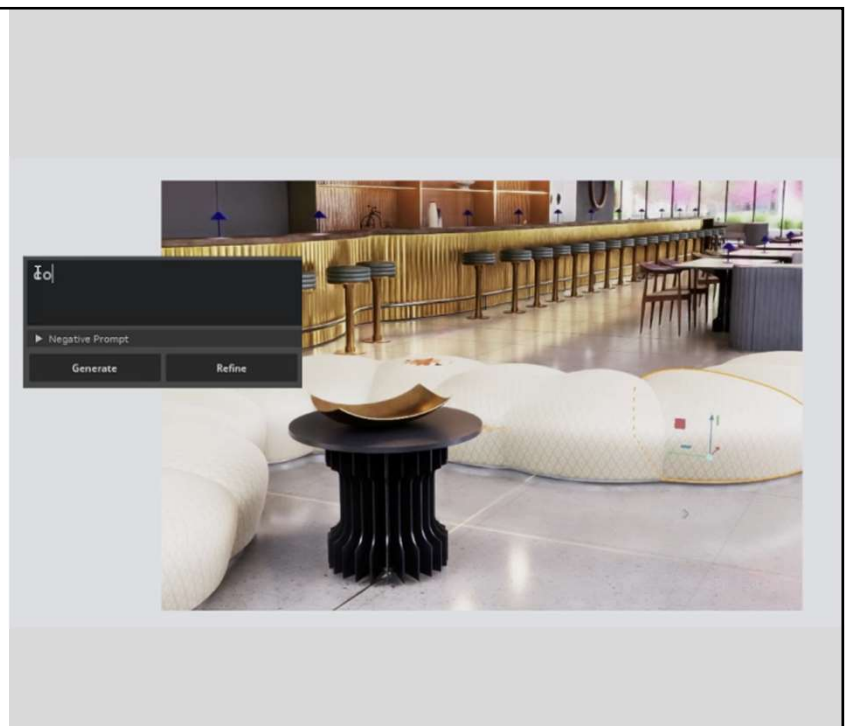
The ultimate AI-powered solution for generating incredible 360° skybox experiences from text prompts.



## Text-to-3D

### Nvidia Omniverse

The platform for creating and operating metaverse applications.



## Text-to-3D

### Opus 3D

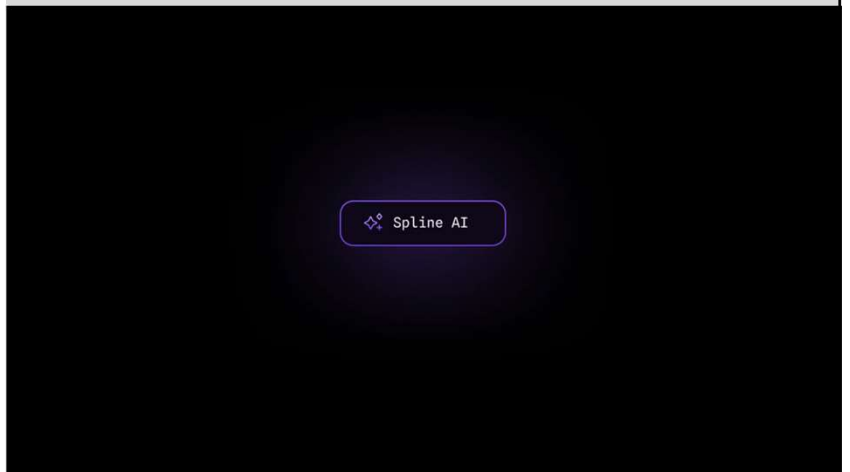
Text to Video and 3D generation using AI.



## Text-to-3D

### Spline AI

Generate objects, animations, and textures using prompts.



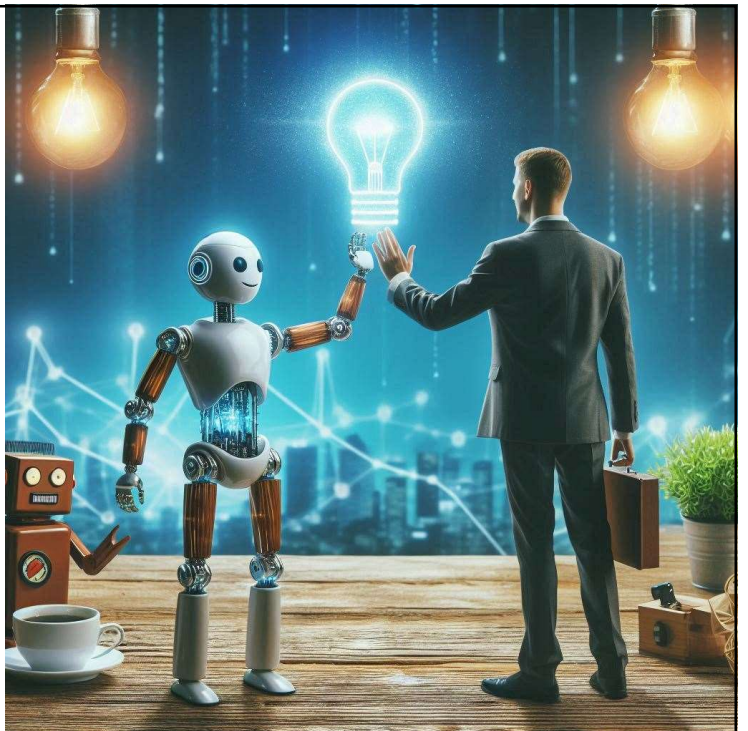
## Future perspective

- AI for productivity
- AI for content generation
- AI for brainstorming
- AI as (personal) assistant
- AI in Augmented Reality and Virtual Reality



## Future perspective

Human & AI collaboration



# ABOUT THE EXAM



## Practical exam information



Number of questions:	40
Time (minutes) for the exam:	60 minutes
% minimal passing grade	65%
Open/closed book:	Closed
Language:	English
Exam format:	Online
Type of questions:	Multiple choice
Are there also negative questions included in the exam? (e.g. "which is NOT a principle off **")	Yes. Candidates are advised to read the questions carefully.



## Learning objectives

### EDF Certified (Text) Generative AI Ambassador

After successfully certifying in (Text) Generative AI Ambassador, a professional has demonstrated that:

- ✓ He or she will be able to use a generative AI model (like ChatGPT), to create various types of content and solve different business problems.
- ✓ He or she will be able to apply prompt engineering techniques and strategies to communicate effectively with generative AI tools and optimize their output.
- ✓ And will be able to explore the features and benefits of the paid version of Generative AI applications, as well as other AI technologies and their future perspective.



## Exam Requirements

According to the Bloom Revised Taxonomy, the (Text) Generative AI Ambassador Certification tests candidates mainly at the levels 1 and 2. Partially candidates are also tested at level 3 although this is not to in-depth.

- Bloom Level 1: Recall & Retention
- Bloom Level 2: Understanding
- Bloom Level 3: Applying

Exam Requirements	Sub-modules	Weight	Bloom
1. Introduction to AI	<ul style="list-style-type: none"> <li>• Essentials of AI</li> <li>• AI in practice</li> </ul>	10%	1 + 2
2. Introduction to Generative AI	<ul style="list-style-type: none"> <li>• Introduction to (Text) Generative</li> <li>• Application, limitations, risks, Large language models</li> </ul>	10%	1 + 2
3. Ethics	<ul style="list-style-type: none"> <li>• Biases in AI algorithms</li> <li>• Influence job market</li> <li>• Privacy and security</li> <li>• Misinformation</li> <li>• Copyright</li> </ul>	10%	1 + 2
4. Prompt Engineering	<ul style="list-style-type: none"> <li>• Prompt Engineering Application</li> <li>• Strategies and Techniques</li> <li>• Expert role</li> <li>• Prompt design principles</li> </ul>	15%	1 + 2
5. Application of Generative AI in theory	<ul style="list-style-type: none"> <li>• Problem setting</li> <li>• Applying prompt design principles</li> </ul>	15%	1 + 2 + 3
6. Application of Generative AI in practice	<ul style="list-style-type: none"> <li>• Content generation</li> <li>• Idea validation</li> <li>• Researching complex topics</li> </ul>	15%	1 + 2 + 3
7. Paid features of Generative AI tools and custom chatbots	<ul style="list-style-type: none"> <li>• Premium versions</li> <li>• Showcase Plugins</li> <li>• Advanced Data Analysis</li> <li>• API for custom AI Chatbot</li> </ul>	15%	1 + 2
8. The future of Generative AI	<ul style="list-style-type: none"> <li>• NLP models</li> <li>• Text-to-image, video and 3D</li> </ul>	10%	1 + 2



**Best of luck with the exam!**



## PRACTICE EXAMS INFO

A practice exam is included within the online exam.

Once you enter the online exam environment, before doing the actual exam. You can do the practice exam test your performance before doing the exam.

The practice exam will give you an indication on how well you master the subject. This is not a guaranty, but an indication.

Be aware, if you solely do the practice exam questions several times you will master the answers rather that the subject. This can provide a wrong indication on how much you master the subject since the exam questions will probably vary from the practice exam.



